

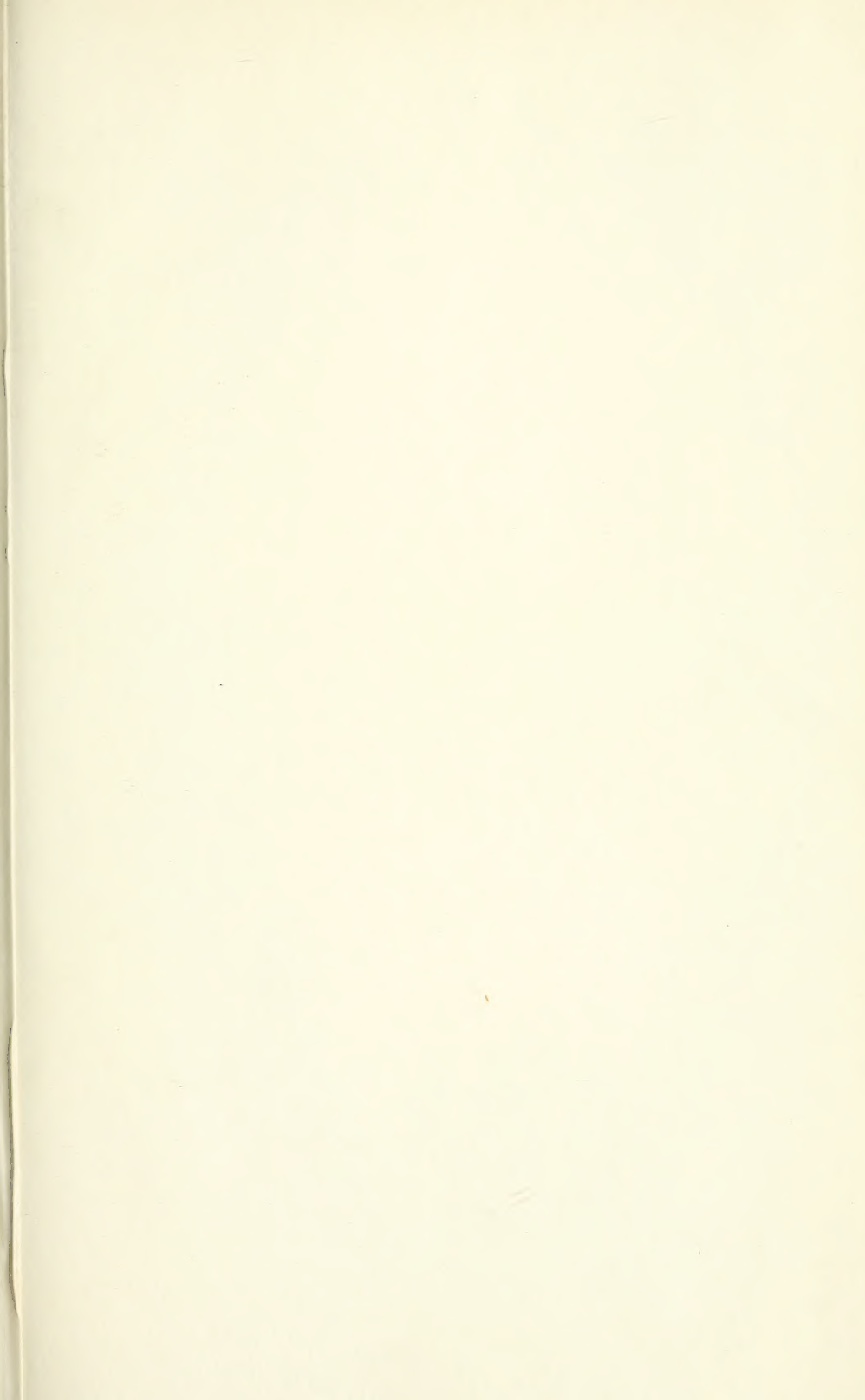
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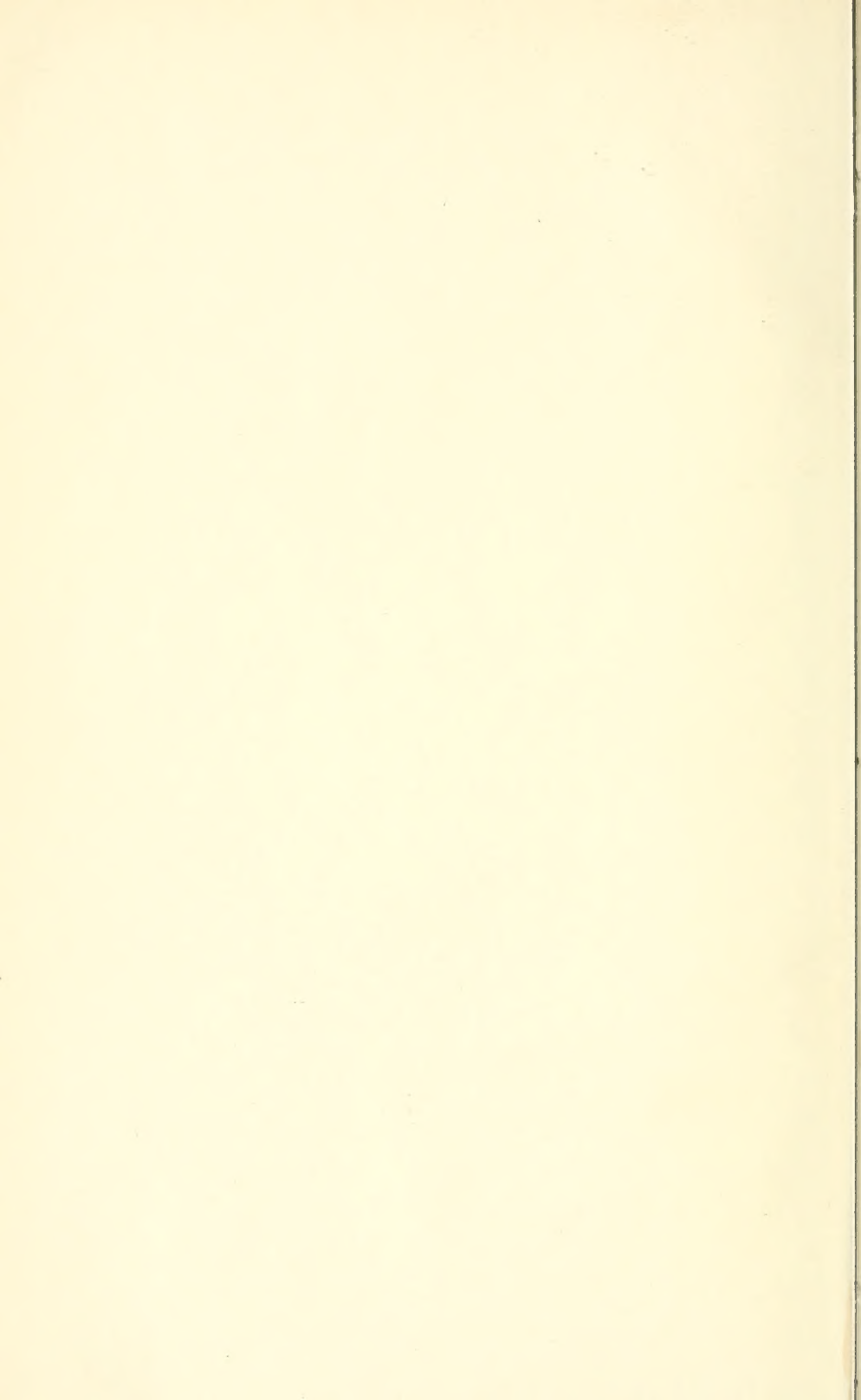
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AND
Diseases of Women and Children

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NO. 1

ORIGINAL COMMUNICATIONS.

ABNORMAL IMPLANTATION OF PLACENTA.*

BY

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THERE is probably no condition in obstetrics which is of graver import to the mother and which at the same time tests the knowledge and taxes the skill and courage of the accoucheur more than a case with an abnormal implantation of the placenta; there is no complication of child-birth which requires to an equal degree intuitive reasoning, keen judgment, and prompt action.

Therefore, to arrive at an adequate understanding of the abnormality, it will be necessary first to consider the normal development of the placenta and *pari passu* the embedding of the ovum; and, second, to investigate why, when, and how the abnormality occurs; and, third, to dwell upon the practical or treatment aspect of this complication of pregnancy.

My regret is that the time at our disposal will compel us to be rather superficial in the consideration of a subject which, from a scientific point of view, is fascinating and from a practical standpoint is colossal in its importance.

When the fecundated ovum, having traversed the Fallopian tube and having been in the process of segmentation for several days, comes to rest upon the mucous membrane of the uterus, generally on the anterior or posterior surface and near the fundus there begins an active warfare between the burrowing ovum and the connective-tissue cells of the endometrium. The proliferating trophoblast, *i.e.*, the outer epiblastic layer of the blastocyst

*Read before the New York Obstetrical Society, November 8, 1910.

which enters into relation with the maternal tissue, sends out numerous processes which permeate the epithelial layer and the stroma of the mucous membrane in its immediate vicinity, causing liquefaction and destruction of the maternal tissue, so that very soon the ovum is almost entirely surrounded by mucous membrane of the uterus. The trophoblast in places becomes vacuolated forming a system of intercommunicating lacunæ which become bathed in maternal blood by the erosive action of the trophoblast against the walls of the dilated capillaries, which later form the placental sinuses. Into the trophoblastic processes there soon grows a core of mesoblastic tissue bearing fetal capillaries from the umbilical blood-vessels and the cells of the trophoblasts arrange themselves more or less irregularly into two layers—the inner or Langerhans' layer, and an outer or plasmodial layer generally called the syncitium, thus forming the true chorionic villi.

To combat and to limit the activity of the embedded ovum, the connective-tissue cells surrounding the blastocyst proliferate to form decidual cells and the superficial capillaries of the mucous membrane dilate enormously. The epithelium at the end of the chorionic villi in relation to maternal tissue is thickened to form "root caps" or "Haftzotten." As the ovum grows, that portion of the decidua which hems in the blastocyst and is generally termed the "decidua reflexa" becomes stretched and thinned, the blood supply becomes very limited and the chorionic villi in relation to it cease to grow and later degenerate and atrophy; whereas the villi in the region of the basal decidua—or as it is commonly called the decidua serotina—continue to grow and enlarge and become branched and thus the discoid placenta is formed. Occasionally the chorionic villi in relation to the decidua reflexa near the serotinal border continue to grow forming the so-called reflexal placenta. Later in pregnancy many of the villi become fibrinized because of obliterative changes in the vessels of the villi.

While the placenta is in process of formation, changes in the mucous membrane of the rest of the uterus occur which are similar—though less marked—to those in the serotina, *i.e.*, degeneration of surface and glandular epithelium, dilatation of capillaries and hyperplasia of the connective-tissue stroma to form the decidua vera.

With this idea of the development of the placenta in its normal position, *i.e.*, on the anterior or posterior surface and near the fun-

dus of the uterus, we proceed to the consideration of its abnormal implantation upon the peritoneum, in the ovary, in the Fallopian tube and broad ligament, in a malformation of the uterus and in the wall and within the cavity of the uterus.

Upon the Peritoneum.—When we consider the active resistant and absorbing power of the peritoneum, it seems almost impossible for an ovum to become primarily implanted upon this structure; and experiments upon animals of ova transplanted into the peritoneum would seem to bear out this hypothesis. However, Galabin in 1896, before the London Obstetrical Society, reported a case which a committee decided was probably "an example of primary abdominal gestation." In 1903, Wittbauer published a similar case and in 1908 B. C. Hirst reported a specimen which he maintains answered the following requirements of primary implantation, viz.:

1. Normal condition of tubes, ovaries and broad ligament, except where ovum is implanted.
2. No penetrations of intraligamentous space from ovarian fimbria.
3. No intraligamentous rupture of tube.
4. Proof that peritoneum constitutes reflexa of ovum.

Inasmuch as no specimen so far reported has attained an age sufficient for the formation of a distinct placenta, we shall not discuss the question in this paper.

In the Ovary.—The cases of ovarian implantation of the ovum seem to show the following factors: Fertilization, retention and growth of ovum in Graafian follicles or in the immediate vicinity of the follicle, active proliferation of the trophoblast and burrowing of the ovum within the stroma of the ovary with marked destruction of ovarian tissue and hemorrhage and with very little or no reaction of the connective-tissue cells of ovary to form a decidua; the destructive activity of ovum is so marked that the ovarian capsule is soon eroded, hemorrhage occurs which either causes death of patient or necessitates operative removal of ovary involved; there is no tendency to true placental formation.

The cases of ovarian pregnancy which have been described as advancing to term with the formation of a placenta have probably not been primary ovarian implantations, as all positive ovarian pregnancies so far described have shown early destruction and rupture; from our present knowledge of placental formation it is difficult to conceive of the development of a true placenta in a tissue incapable of decidual reaction.

Whether the embedding of the fecundated ovum in the Fallopian tube is due to inflammatory changes within or external to the tube wall itself or in the ciliated epithelium, or to newgrowths, or to diverticula in the tube, or to developmental anomalies, or to psychical conditions; or whether it is due to changes in the ovum itself, is not in the province of this paper to discuss; we shall consider only distinct placentation in relation to the Fallopian tube.

The ovum of Peters, those of v. Spee, the collected ova described by Webster and the recent work of Bryce and Teacher, taken in connection with specimens of tubal pregnancy, seem to prove that distinct placental formation can occur only in those tissues capable of reacting to form a decidua, thus limiting the activity of the trophoblast of the chorionic villi; and that, if this decidual formation is slight or absent, the ovum must be a sacrifice to its own activity, caused by destruction of maternal tissue and hemorrhage.

While the mucous membrane of the tube is genetically similar to that of the uterus, the tubal reaction to the implanted ovum is not at all constant; in some the decidual formation is very scant or absent, while in other specimens it is marked and sufficient for the development of a typical decidua serotina. When the decidual formation is slight, a *membrana capsularis* develops which, however, is soon eroded, leading to rupture or abortion; when the decidual reaction is marked, a true placenta is formed and, as the fetus develops, the structures of the tube become so thinned that it soon ruptures either into the peritoneal cavity, forming a tuboabdominal pregnancy, or into the broad ligament, forming a tubointraligamentous pregnancy. These latter conditions may be associated with so much hemorrhage that either the fetus or mother or both may die; or, if the placenta has not been disturbed to any extent, the fetus in its sac may continue to grow to term and may by operative interference be born alive. More often the fetus dies in the later months and may undergo calcareous, fatty, or putrefactive changes; the intimate association with the intestines makes infection by the colon bacillus especially to be feared.

When the ovum develops in that portion of the tube within the uterine wall, there is always the possibility of the fetus being dislodged into the uterine cavity, the placenta remaining within the wall. Because of the thickness of the uterine wall these interstitial ectopics often reach a more advanced stage before rupturing than those in any other portion of the tube.

The diagnosis of the various ectopics with placental formation is often a difficult matter and they have often enough been mistaken for intrauterine pregnancies. The question is too involved to be considered in this paper.

In regard to the treatment of these cases, the general law in reference to all extrauterine pregnancies holds good; *i.e.*, when the diagnosis is made, operate. It was formerly held to be the better plan to wait with the hope that the patient would have a spurious labor, that the fetus would die and that, after waiting several days, an operation could remove both fetus and placenta without the large amount of hemorrhage associated with the removal of a living placenta. While the difficulties of the operation are lessened by this procedure, the dangers during the waiting period, *e.g.*, spontaneous hemorrhage, infection, outweigh the advantages, and the preponderance of opinion to-day favors early operation. Whether the sac be removed with the fetus and whether the placenta be removed at the primary operation or be deferred for several days, are matters to be decided by the conditions and anatomical relations found in each particular case. In general, the abdominal route is preferred to the vaginal by most operators.

That pregnancy may occur in the rudimentary horn of a bicornuate uterus has been proved by cases collected by Sanger, Himmelfarb and Kehrler; they generally proceed to placental development and may go to term; the tendency to rupture and hemorrhage is, however, great, especially if the horns of the uterus are completely separated; the indication is for an operation as soon as diagnosis is made.

In the Uterus.—The normal site in the uterus for the implantation of the placenta may be said to be anywhere in the upper uterine segment, the favorite location being the posterior or anterior walls and extending upon the fundus; there is some difference of opinion as to which position is the more common, but there is probably no great variation, as Holzapfel in a series of 107 cases found the placenta on the anterior wall in forty-two and on the posterior in forty-five. The implantation in the horn of the uterus is not uncommon, and in the quoted series the placenta was found fourteen times in the tube angle and five times laterally just beneath a tube.

An implantation within the lower uterine segment may be said to be abnormal, although many of these situated at some distance from the internal os give rise to no symptoms and have

been termed "vicious implantation" by Pinard who, judging from the location of the rupture in the membranes, stated that they occurred in over 25 per cent. of all cases; this large percentage has not been generally accepted as based on fact.

When the placenta is situated over the internal os or when during the dilatation of the cervix any portion of the placenta overlaps the circumference of the cervix, it is termed a placenta previa, a condition not uncommonly found, although there is no unanimity as to the frequency, the reports varying from one case in 133 delivered to one in 1500, the greater frequency occurring in hospital practice. It is generally admitted that the condition is seldom found in primiparæ, Galabin stating that only 4.4 per cent. of the London and Dublin cases were primiparæ. Of the different forms of placenta previa it is generally admitted that the partial variety is of much greater frequency than either the central or marginal.

When we consider the cause of placenta previa, we enter a field of speculation. Hofmeyer's theory, that the condition is due to the continued growth of the chorionic villi in relation to part of the decidua reflexa, forming a reflexal placenta, and the later union with the decidua vera in the region of the internal os, is accepted as a cause in some cases. Many believe that a placenta previa can occur only from a primary implantation in the lower segment of the uterus and its extension over the internal os by cleavage of decidua vera. That the ovum may be implanted at the internal os has been denied by eminent authorities, on the ground that no specimen has ever been shown in which the ovum was implanted in this locality and that it was impossible because of the small size of the ovum as compared with the internal os. Bumm, however, in answer to this asserts that the walls of the cavum uteri, as well as the internal os, are in apposition forming a capillary tube and that the ovum is prevented from adhering to the upper segment by muscular action of the uterus or by the lack of adhesive power of a chronically inflamed mucous membrane and that its expulsion from the uterus is retarded by a plug of mucus and blood at the internal os, and that the burrowing ovum in this location soon causes degeneration of the epithelial covering at this site and the coalescence of the walls and the formation of the decidua serotina; and he also shows that findings in mammals with placentation similar to the human, prove the possibility of a placenta at the internal os formed in this manner.

Bumm's theory seems to be simple and to apply to all forms: the ovum arrested at the lower segment, perhaps at the inner os, in a uterus with only a capillary lumen and with its anterior and posterior walls in contact, gives rise to a placentation which may involve the entire lower segment and lead to the various forms of central, lateral, and marginal placenta previa.

Others maintain the cause lies in the ovum itself, whose embedding depends upon a definite stage of development and that the ovum implanted itself wherever it happened to be when this stage is reached; that normally this period requires five to seven days after fecundation and that generally at this time the ovum has reached the upper uterine segment; that disharmony in the relations of maturity and wandering of the ovum causes dystopic implantation and that if the ovum reaches the uterus unprepared for embedding, it wanders till arrested at the lower segment.

Whatever the cause or causes may be, clinically it generally is observed in multiparæ who have had a number of pregnancies and frequently in rapid succession; in those who exhibit endometritis or subinvolution of the uterus from any cause. The placenta previa is frequently thinner and more widely spread than usual, adhesions are frequently strong, requiring manual interference in the removal of the placenta and postpartum hemorrhage is common because the thin lower uterine segment is unable to contract firmly upon the bleeding vessels.

The source of the bleeding is always maternal and for the most part from the uterine wall, although we admit the possibility of some fetal hemorrhage if the placenta has been broken up by manual interference. The clotting in the detached portion of the placenta often prevents the continuous loss of blood from the placenta itself, which we might expect to flow constantly, because of the free communication of the maternal blood spaces throughout the whole placenta.

While the amount of bleeding in the central previas is generally the most severe, it may be very mild, whereas the partial variety may cause the most profuse hemorrhage; it is a wise policy to consider as dangerous any bleeding from a placenta previa, for while in the beginning it may be slight and soon cease, it may later return with severity, and it must be remembered that small repeated hemorrhages are just as grave as the profuse variety.

As a rule, bleeding in placenta previa does not manifest itself before the seventh month of gestation, and when it is found at an earlier date, it is not particularly dangerous, not one of the

numerous cases reported by Müller having died when hemorrhage occurred before the seventh month; however, an occasional death has been reported by other observers at an earlier stage; there can be no doubt that many abortions in the earlier months are caused by placenta previa.

Bleeding in the later months of pregnancy is the only subjective sign of the abnormality and the diagnosis must be made by a vaginal examination under anesthesia, if necessary inserting the finger within the internal os to feel the gritty placental surface. Too much reliance must not be placed upon the boggy feeling of the lower uterine segment, nor upon increased pulsation of the vessels in this locality, and it must be remembered that organized blood clots in the cervical canal may simulate placental tissue.

The condition of placenta previa is potentially so grave that once the diagnosis is made, labor should be induced directly. For the prognosis in great part is dependent upon the patient's condition before operative measures are instituted, as one who has had repeated or profuse hemorrhages is in such a devitalized condition that in many cases no form of treatment will prove satisfactory.

The treatment of placenta previa depends upon the condition of the cervix and the amount of hemorrhage.

With a rigid cervix—a circumstance uncommonly found with placenta previa—admitting only one finger, with moderate or profuse bleeding, a vaginal tampon of gauze well packed in the fornices with considerable pressure, is strongly recommended by the authorities of the Rotunda in Dublin. However, as the cervix dilates and further separation of the placenta takes place, the tampon will not suffice in many cases to stop the bleeding and recourse must be had to other methods.

It has been observed clinically in many cases that mere rupture of the membranes causes the bleeding to cease, due probably to the fact that when the liquor amnii is drained away, retraction of the muscle wall presses the torn vessels and allows the placenta to recede with the cervix and the presenting part to compress the bleeding vessels of the uterine wall; therefore, as soon as the cervix permits, the finger should be introduced and the membranes ruptured, or if the central previa be present and the bleeding not profuse, it should be perforated; the combination of drainage of the amniotic fluid preceded by vaginal tampon has proved very satisfactory, especially in the partial variety.

When the hemorrhage is severe and the cervix admits two or more fingers, the best results, as far as the mother is concerned, are obtained by the performance of Braxton Hicks' or internal podalic version, using the child's thigh and buttocks as a tampon. This method gives a high fetal mortality of about 60 per cent., but the maternal is reduced to about 3 to 6 per cent. In this relation it is important to emphasize the necessity of the slow extraction of the child after the foot has been brought down; for if rapid delivery be attempted with an incompletely dilated cervix, rupture of the lower uterine segment with the attendant mortality will deprive the method of all its advantages.

To diminish the fetal mortality, various other forms of treatment have been used, as the introduction of the Champetier de Ribes bag after the membranes have been ruptured, manual dilatation of the cervix and accouchement forcé, the performance of vaginal and the various forms of abdominal Caserean section, and in Europe the use of the Bossi dilator.

In regard to the use of bags, there seems to be some diversity of opinion as to their power of reducing the child's death rate, Pinard and Zimmermann reducing the fetal mortality to 31 and 36 per cent. respectively, with no increase in maternal, while Hofmeier and others deny any improvement with the method. It would seem, however, that in proper hands the use of Champetier's bag should be encouraged in the hope of lowering the fearful fetal mortality, and in those cases where after rupture of the membranes bleeding still continues, and we fear the danger to the mother in a version.

The manual dilatation of the cervix followed by immediate extraction of the child has, at the hands of certain men, given excellent results both for mother and child, Meuleman of Amsterdam in forty-five cases giving a fetal mortality of only 15 1/2 per cent. and a maternal of 4 1/2 per cent. With a soft cervix and inconsiderable bleeding and with a competent operator this method should be encouraged, but if the cervix does not dilate easily, it is a dangerous method especially for the mother. The use of the Bossi dilator in placenta previa is not looked upon with favor in this country.

Vaginal Cesarean section for placenta previa has been condemned generally by obstetricians, and the published reports on this procedure are not very encouraging; however, I have seen rare cases where the operation has seemed to be indicated, *e.g.*, a live child at or very near full term, a pelvis of ample proportions,

a cervix which does not easily admit of dilatation, in a patient with a central or partial placenta previa, who has lost but little blood and who is bleeding but slightly at the time of examination; in such a case the technical difficulties at the time of operation would not be great, and the result for mother and child would probably be satisfactory; however, we do not often find a combination of circumstances such as we have described.

In regard to abdominal Cesarean section, including the Porro, the extraperitoneal and intraperitoneal operations, there is considerable divergence of opinion, many good authorities stating that the operation is seldom indicated and then the predominating idea is to rescue the child.

When we consider how many children are premature when the placenta previa is recognized, and how many mothers have bled profusely before coming under observation at the hospital and are in no condition to withstand the shock of a Cesarean section, when we appreciated the chances of infection having taken place and our inability to always have a proper technical environment, the field for Cesarean section certainly becomes limited. However, under proper surroundings with efficient help, an uninfected uterus, with a live child at term, and especially if the size of the pelvis would seem to indicate a tardy delivery, when the cervix is not easily dilatable in a mother who has not bled profusely and in whom the bleeding may be controlled by a vaginal tampon, with a central placenta previa, Cesarean section is the operation of choice.

In the class of cases I mention the mortality from Cesarean section should be no greater than the same operation for other conditions, and that is as low as the least mortality for nonoperative measures in placenta previa, and in addition we may save nearly all the children.

To avoid loss of blood and to take care of a possible uterine infection, the Porro operation was recommended by Lawson Tait in 1898 and by Gillette in 1901 and by numerous others since.

The perusal of the mortality records for placenta previa, especially the central variety, is not a pleasant task, particularly in regard to the child, and the results obtained are dependent upon the age of pregnancy, the condition of the mother when first seen, upon the method of treatment and upon the skill and good fortune of the obstetrician.

SHOULD ECLAMPTIC MOTHERS NURSE THEIR NEW-BORN?

BY

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WITHIN the last few years several pathetic cases have come under my notice, the sincere consideration of which has led me to endeavor to find a satisfactory answer to the title of this paper, Should eclamptic mothers nurse their new-born?

The question considered from the point of view of the interests of the child is a new one, one upon which nothing has been written and upon which little if any discussion at all has taken place.

My cases are three in number, where healthy infants, or seemingly healthy infants, evinced no signs whatsoever of disease until the first copious nursing, when they suddenly died without apparent cause. These children died a death so similar in its antecedents that we are compelled to think that their exitus was from a common cause. They were well, even in vigorous health, until two hours after a copious nursing, and they were so insidiously and rapidly taken ill that it was easy to see that there was no chance of recovery, even though seen in the early stage of the onset.

Let me describe the cases in full and later consider some of the broader questions dealing with the effects of eclampsia upon both the mother and her offspring. I am writing of these cases, not in the spirit of the man who feels that when he has completed his report the last word will have been said upon so weighty a matter, but rather in the spirit of the man who seeks after knowledge, with an open mind, hoping that his lines may draw forth evidence from other sources either to corroborate or refute his conclusions.

CASE I.—The first case was a near relative, a young woman of thirty-five years, mother of three children, and a more healthy specimen of womanhood one seldom sees. She was delivered at full term of a strong, healthy infant, which cried lustily immediately after birth. According to the physician's statement, and this is fully corroborated by statements of near relatives, the patient had shown no signs of eclampsia either before or after delivery. The labor was easy and free from instrumentation. I

happened to be on a visit to Ottawa at the time and called to see her on the second day after delivery. She looked remarkably well and seemed in the best of spirits except for a slight headache. The child was a strong, vigorous, well-nourished baby of eight and a half pounds. To my very great surprise I was summoned to Ottawa on the following morning to find the mother in the coma of eclampsia. She had gone to sleep at 10 o'clock on the previous evening and the nurse slept on a lounge in the same room. At 7 o'clock the nurse was awakened by the bumping of the head of the bed against the wall. Her patient was in a convulsive seizure. Convulsion followed upon convulsion in rapidly decreasing intervals. I arrived in Ottawa on the noon train to find the patient in a deep coma from which she died without rallying except for a few moments when she made sign for writing materials to let her husband know her wishes, which she could not speak. She gradually sank and died that night at 8 o'clock from respiratory failure during a seizure.

The child had nursed for the last time at five o'clock that morning. During the night the breasts had filled up rapidly and it was the first successful nursing that the child had had.

At 10 o'clock the nurse looked at the child to find it blue in the finger-tips and nails and cold about the ears and feet. Previous to this, owing to excitement over the mother's condition, the child had been overlooked. At noon upon my arrival the child was cold and cyanosed about the extremities, respirations were irregular and shallow. Somnolence was very pronounced and seemed to amount almost to coma. The pulse was slow and full. The abdomen was slightly distended. There were slight muscular twitchings of the face and rigidity of the extremities. At 4 o'clock the abdomen became markedly distended and tense like a drum membrane. The cyanosis had spread to involve the cheeks and neck, the eyes were closed and the lips a dark livid color. Respirations were very slow and very shallow, though very variable like a Cheyne-Stokes respiration. Careful examination now and previously did not help to clear up the diagnosis. The respirations grew more shallow and slower and the cyanosis gradually spread and deepened; the abdomen became still more distended in spite of all measures adopted. At 6 o'clock respirations gradually ceased and the cyanosis became intense; slight convulsive seizures had preceded the cessation of respiration. Upon my being summoned I found the heart still vigorously beating and by means of artificial respiration the cyanosis was gradually relieved, but respiration could not be established. After fully twenty minutes of artificial breathing the pulse could still be detected in the radials.

The second case is very similar in the main though differing somewhat in several particulars.

CASE II is that of a young woman of twenty-eight years. She had had albuminuria and casts during the last month of

pregnancy, and in the last week antepartum had suffered a very great deal from occipital headache and epigastric pain. Her labor was easy and not very long. The above symptoms continued for the first day after labor and thirty-two hours after delivery she had her first convulsive seizure. The convulsions followed in as many half hours and then she slowly recovered. The child had been nursing previous to the seizures and nursing was continued afterward. It received no satisfaction at the breasts until the morning of the third day when the child had a full nursing and it ceased to cry. Six hours later its hands and feet were cyanosed and cold and its lips were blue. Respirations were shallow and slow. The child was somnolent and there were muscular twitchings with occasional nystagmus. Careful examination failed to reveal anything in the several systems. The respirations grew shallower and slower until they finally ceased and the cyanosis grew progressively deeper. Distention was well marked—in fact both cases were so similar in every respect that I was at once roused to find a common cause.

CASE III is of more recent date. Mrs. S., a strong healthy woman in her third pregnancy, suffered from albuminuria during the last two months of her pregnant state. She was in the seventh month when I first saw her. My examination at that time revealed a markedly accentuated aortic second sound and a marked hydramnios. I at once suspected renal insufficiency and upon analysis found 4 grams of albumin to the liter. On a strictly milk diet she improved a great deal both as to her hydramnios and as to her great discomfort when lying down, owing to dyspnea. The albumin fell somewhat in amount, but the quantity of urine, though of low specific gravity, was always large. However, the improvement was only temporary, for soon the albumin rose from 3 grams to 7.5 and later to 10 grams.

Singularly enough, the symptoms apart from those caused by the hydramnios were almost negligible. There was a very slight edema of the ankles and of the region of the hypogastrium as is so frequently found in hydramnios. She never had headache nor vomiting.

Labor came on on December 26, ten days before the calculated time. The membranes ruptured almost with the first pains, but the labor progressed rapidly and easily. During the second stage the patient's eyelids twitched, the right side of the face had slight convulsive attacks and twice when the pains were on the eyes turned to the left and became fixed and respiration became somewhat jerky. However, though sailing close to the wind, she escaped without accident.

On the second day the mother complained of loss of appetite and severe headache. The bowels had moved and moved freely. But the urine was still loaded with casts and albumin and bile and there was edema of the eyelids. There was slight jaundice. On the morning of the third day the patient seemed a great deal better and as I entered the room she said that the baby had been

ravenous previously, but that she had felt the milk pouring into her breasts during the night and it had had a good nursing in the morning at seven, and not a whimper had been heard from it since, but it would not nurse the second time it seemed so drowsy. She asked me to have a look at it to see that it was all right. As I passed out of the room the nurse said "I think the baby is sick." A glance was sufficient. The same clinical picture was before me: duskiess, cold extremities, blue nose, shallow irregular respirations and muscular rigidity from time to time in the lower extremities. A careful examination threw no light upon the diagnosis. At 6 o'clock that night I was told to come at once. The father met me in the hall and said that "it was all over with the baby." The child had been dead some minutes from what was told me. It had been laid out in a child's cot in the nursery and was covered with a white sheet. All this had been done deliberately after the supposed death. When I raised the sheet the face and neck were almost as black as ink but the pulse was still readily palpable at the wrist. I am not prepared to say how much time had elapsed between the "death" of the child and my arrival, but I simply cite the facts and leave my readers to judge for themselves. I took the child to the grate fire and began artificial respiration so that the cyanosis diminished rapidly. I continued the maneuver for about fifteen minutes and at that time, though the radial pulse was not palpable, the cardiac sounds were audible with the stethoscope. Death followed after one-half hour of fruitless effort.

The albumin persisted for a long time in large quantities in the mother's urine and was not entirely normal until six months after delivery.

Such are the histories of my cases. The casual reading, not to say careful study of them, will, I think, leave every thinking practitioner with the question in his mind, was there any connection between the nursing and the incidence of the sudden change in the child's health? What was the nature of this illness? Is an eclamptic mother's milk toxic? If toxic, why to her own child which was nourished from her own blood? Were these children healthy or only seemingly healthy before the onset of such startling symptoms? Are children born of eclamptics healthy children? Can mothers' milk secrete a condensed or accumulative toxin more virulent than that which she has circulating in her blood? In a word, should eclamptic mothers nurse their new-born babies?

I have made a complete review of the literature in the hope of finding analogous cases, but as fruit of my labor I found but one well authenticated case. But the search has been replete with interest and has thrown a great deal of light upon these rather obscure questions.

Let me begin by answering the question, *Are children born of eclamptic mothers healthy at the time of their birth?* A great deal of literature upon the subject proves conclusively that they are far from being healthy. Von Winckel, in 1893, was the first to lay stress upon the necessity of performing autopsies upon children born of eclamptic mothers. Since then many authors have given their attention to this side of eclampsia with results that have been far-reaching. Bar and Guyiesse found that in seventeen children born of eclamptic mothers in all cases there were signs of general intoxication and in a large percentage the lesions were identical with those of eclamptic mothers who had succumbed to the disease.

Schmorl autopsied six children born of eclamptic mothers and in four cases found advanced degeneration of the kidneys and hemorrhages in the liver in all six of them. Lubarsch examined five such children and found advanced renal and hepatic lesions in all of them. Prutz found in the kidneys of a child of an eclamptic cellular degeneration of the renal tubules with cellular and hyaline casts in their lumen. Similar results are recorded by Chamberlent, Knapp, Dienst, and Williams.

Moreover, there are on record not a few cases where the infant born of eclamptic mother or of a mother who presented all the primordial signs of eclampsia, developed true eclamptic seizures within the first three days after birth. Some of these succumbed, others survived. Schmid published one such case in which convulsions occurred shortly after birth. The autopsy showed all the organs to be affected similarly to those of eclamptic women. The kidneys were particularly affected, showing marked degeneration and associated with albuminuria and hematuria. Wilke wrote of a case in which typical eclamptic seizures came on after birth and the autopsy revealed a toxic encephalitis. Similar cases have been described by Moraweck, Wendt, Woyer, Nicarelli, Pels-Leusden and Winkler.

Knapp held an autopsy on mother and child and found the same pathological changes in both.

It is also interesting to note that Schmid found albuminuria in the case of a child which died of eclampsia. This was corroborated by Eskelin who found blood and casts and albumin five times in as many cases born of eclamptic mothers. Similar results have been described by Audebert and Arnozan.

Dienst's exhaustive monograph deals with seven cases of eclampsia or threatened eclampsia in the mother, and with either

signs of advanced nephritis or with true eclamptic seizures in their offspring. His first case was twenty-two years of age. She had one eclamptic seizure immediately after delivery and then made an uninterrupted recovery. The child had its first convulsion seven minutes after birth. Others succeeded rapidly and it died of respiratory failure. The breathing grew slow, irregular and very shallow, and cyanosis was well marked. Deep somnolence was a feature. The heart's action was still strong after the respiration had ceased and artificial respiration was kept up for quite a while. Autopsy showed signs of acute nephritis and the condition of the liver was typical of eclampsia, viz., focal necrosis, thrombosis, with congestion and hemorrhages.

In the second case mother and child succumbed after Cesarean section. The child was living when operation was begun, but when removed was perfectly rigid in all its body and extremities. It evidently had died in a convulsive seizure *in utero*. The pathological findings were similar in both mother and child. The urine was drawn from the child's bladder by means of a soft catheter immediately after it was delivered from the uterus and it was found to be the urine of acute nephritis. It contained 10 grams of albumin to the liter, numerous red blood cells, few leukocytes, and casts of all kinds.

CASE III.—Eclamptic mother died after Cesarean section. Her child survived. The urine collected from the infant showed hematuria and albumin for three days. The albumin disappeared on the fifth day and the child gained slowly.

CASE IV.—Eclamptic mother died, survived by her infant. The urine collected from the child showed a large amount of blood, albumin and leukocytes, hyaline and blood casts. The urine was free from albumin for the first time on the eighteenth day after birth.

CASE V.—The mother died in eclamptic seizure. Her child had light convulsive seizures during the first five hours after delivery.

CASE VI.—Eclamptic mother gave birth to twins. The mother had but one convulsion and recovered. The twins thrived, though both gave urine loaded with blood, albumin and casts.

CASE VII was of less importance.

Wilke published a case also where the infant had its fourth convulsive seizure twelve and one-half hours after delivery and its mother her first eclamptic convulsion thirteen hours post-partum. In Woyer's case the mother had her first eclamptic

seizure four hours antepartum and three more postpartum. The child died after its fourth convulsion.

Similar cases are reported by Schmid, Moraweck, Gurick, Eskelin and Levinowitsch. In one of Gurick's cases the eclamptic convulsion did not appear in the child until forty-six hours after birth.

I think that enough has been quoted to show that children born of eclamptic mothers are far from being healthy. In every one of them marked structural changes in the viscera, indicative of grave intoxication, were readily demonstrated, practically all of them, both those which survived and those which died, in whom the urine was examined, there were all the signs of more or less renal injury. The milder cases showed only slight albuminuria and casts, the graver cases showed blood, albumin and casts in large quantities. Moreover, in one case the albuminuria persisted for eighteen days after birth. In all the cases that succumbed there were grave structural changes in the liver and other viscera. Hence it may be affirmed with all certitude that the vast majority of children born of eclamptic mothers or of mothers threatened with eclampsia, are more or less profoundly and similarly affected. Inasmuch as two of my cases were eclamptic mothers and the third had 10 grams of albumin to the liter and had muscular twitchings during delivery, one is pretty safe in considering the children as being tainted with the same disease as the mother.

I think, therefore, the answers to the questions, Are children born of eclamptic mothers healthy? Were the children in my three cases healthy or only seemingly healthy before the onset of such startling symptoms? can be considered as settled as can any question in the open subject of medicine.

Moreover, I consider eclampsia in the mother a fruitful source of the many chronic cases of nephritis in young children. How often nephritis occurs in children from three to six months of age is rather difficult to establish. But this I do know that within the last four months my attention has been called to two such cases by practitioners who knew that I was interested in the subject. The frequency of nephritis is overlooked in a great many cases owing to difficulty of getting specimens of urine. But Dr. F. M. Fry, who has made urinalyses in 100 cases of infants in the foundling hospitals has devised an easy method of obtaining specimens. This consists in putting cold to the abdomen or buttocks. It seldom fails and a specimen can be obtained at any

time provided two hours have elapsed since the last urination. He found nephritis, evidenced by casts, in 31 per cent., and evidenced by albumin and casts in 19 per cent. Yet it seems strange that in looking over standard works upon diseases of infants, not one author makes mention of eclampsia, which, to me, seems such a potent factor in the etiology of nephritis in children.

Since writing these foregoing lines another case of death of a child with all the symptoms of nephritis has come to my notice. It was in its fifth month and was born of an eclamptic.

Is an eclamptic mother's milk toxic?

It would be a very singular lack of coincidence if a mother's blood could be saturated with the poisons of metabolism to such a degree as to cause the grave cerebral disturbances culminating in eclamptic seizures without the secretion of the breasts being at all tainted with the same metabolic products. It would be contrary to all the laws which govern secretions. Some of the toxins must pass over into the milk; as evidence of this I have but to mention the startling symptoms in the infant when small doses of drugs are administered by mouth to the mother. In such cases the doses given have been infinitesimal yet the poisonous action has been seen in the nursing infant. At least we must assume that a certain quantity of the toxins are eliminated in the milk. So much the more must this be the case, for Massen has shown that the urine of eclamptic mothers is less toxic than is her blood. Owing to the failure of the diseased kidneys to eliminate the products of metabolism the poison becomes stored up in the blood. Under such circumstances can the reader adduce any one case where the loss of function in one eliminative organ has not been more or less compensated for by other organs of elimination? And as to the question of the secretion of toxins in the milk, can we doubt the fact when we know that even bacteria pass from the mother's blood stream into the breast secretion? I think it is thoroughly established at the present day. The whole clinical picture is one of metabolic arrangement whereby the organism becomes saturated with the products of an autointoxication. That poisons do pass over in the milk needs, I think, no further evidence of confirmation.

If a mother's milk is toxic why should it be to her infant which has been nourished through her own blood? Can a mother's milk secrete a concentrated, an accumulative toxin more virulent than that which circulates in her system?

Let me begin by answering the second question first. We

have no evidence which we can bring to bear upon this question; I mean purely experimental evidence. The clinical evidence is slight but of great value. But by analogy we have the strongest proof that such can be and is the case, that the mother's milk can secrete a more concentrated toxin than that which circulates in her blood. For example, take mercury, its administration to a nursing mother has produced on more than one occasion alarming symptoms of poisoning in her child. Again, let me but refer to an experience of my own in which, owing to gall-stone attacks, I had administered 2 1/4 gr. of morphia within twenty minutes, yet the fetus *in utero*, so far as auscultation was concerned, showed no untoward effect, but the administration of a 1/4 gr. six days later and four and one-half days after the delivery of the child caused the most alarming symptoms in the nursing infant. In other words, it got a more concentrated or larger dose through the milk than through the mother's placental circulation. You will probably object that morphia is a respiratory depressant and that the respiratory center is inactive *in utero*. To this objection let me state that the eclamptic toxin acts also as a strong respiratory depressant in the fetus and its action is very similar to that of morphia, so the objection becomes on the contrary a very strengthening argument.

To further substantiate this point I am indebted to my colleague Dr. J. C. Meakins for a most interesting case report. While working in the Rockefeller Institute as clinical analyst, he had occasion to inquire into the cause of a persistent diarrhea in a nursing child. He found that the mother had been taking five minims of Fowler's solution after meals. The diarrhea in the infant had resisted all remedial measures. He found upon examination of the mother's milk and urine that the same quantity of arsenic could be obtained from one part of milk as from ten parts of urine. In other words, the arsenic in the milk was ten times stronger than that in the urine. As soon as the arsenic treatment was stopped the child grew better of its diarrhea. The same argument holds for the toxin of eclamptics, for their urine is far less toxic than is their blood, and the breasts, having been free from function prior to delivery, would not be diseased to the same degree as the kidney and nature would in all likelihood use them as a new avenue for elimination of toxic products.

Now let us turn our attention to the first question. If a mother's milk is toxic why should it be toxic to her infant which has been nourished through her own circulation? This is prob-

ably the most interesting point of this paper. It would seem very strange if a mother's milk is toxic why so few infants are overcome. The reason for this seeming discrepancy is not far to find. It is known that in most cases of eclampsia, yes in the vast majority of cases, the convulsive seizures come on prior to delivery and that with the emptying of the uterus the patient's condition rapidly improves. So rapid is the improvement that the albumin in a large percentage of cases has completely disappeared by the third day. One has but to think of the tremendous diuresis which inaugurates the general improvement to realize what an astounding amount of toxin must be eliminated in the first days postpartum. Such is the course of the usual case. Yet it is just during this period that the breasts are almost if not wholly inactive and by the time that the breasts begin to secrete there is no longer any or but a comparatively low grade of toxemia present in the mother. No, it is not in such cases that the milk becomes very toxic; it is just in those cases where the toxemia of the mother remains owing to failure of elimination, or worse still, when it reaches its height during full lactation. It will be in those cases in which some grave antecedent chronic renal affection prevents rapid elimination and favors a prolonged high index of maternal toxicity or it will be in these cases where the seizures come on late postpartum. It may be stated that the later the convulsions postpartum, and therefore the nearer to the period of full lactation, the graver will be the prognosis for the nursing child. Does this conform with my experience? It does exactly. Let me cite my cases.

CASE I.—Seizures began on the morning of the third day. The baby had had its first copious nursing two hours before the onset of the convulsions.

CASE II.—Eclampsia set in thirty-two hours postpartum. The infant received satisfaction at the breast for the first time a few hours previously.

CASE III.—Muscular twitchings at labor, but no convulsions. Severe headache and loss of appetite on second day. The urine remained full of albumin, 7 grams to the liter, and contained numerous casts. The child took sick on the morning of the third day after the mother had felt the milk pouring into the breasts through the previous night. The albumin did not disappear from the urine until six months postpartum in this last case.

One well authenticated case in the literature is that of Kreutzman, assistant physician to the chair of obstetrics and gynecology at the university of Erlangen (Prof. Zweifel), from whose

report I will quote freely inasmuch as it bears out to a nicety my own previously formed conclusions.

"Patient was a perfectly healthy primipara who showed signs of albuminuria at the sixth month of her pregnancy. During the last month the albumin was 6 grams to the liter. The labor was easy and the child vigorous. There were no eclamptic seizures in the mother's case. The mother's recovery was good, though the albumin persisted for a long time. The baby cried immediately and was perfectly normal. It weighed nearly 8 pounds. He slept all day and acted in every way as any other healthy baby would do; the mother wished to nurse the baby, so he was put to the breast, not getting anything there certainly, but some colostrum; the nurse gave him a little boiled water to drink. On the second night, about thirty-six hours after birth, the baby was taken with convulsions, which came on without any warning; another attack was noticed next morning, and a third one at 8 A. M. Neither one of these I myself had the opportunity to see. At 11 A. M. there occurred another one followed in half an hour by a fifth. This last one occurred while I was in the room. . . . He was kept perfectly quiet, not handled at all; bromide of potash was given. There occurred only one more short attack in the evening; from that time on the baby thrived on diluted cow's milk and later on a wet-nurse's breast beautifully. From the time of the first convulsion he had not been put to the breasts. . . . The convulsions were described by the nurse as being identical with those I saw."

After eliminating all possibility he concludes that the cause must lie in the transmission of the toxins of the mother to her child *in utero* and that this later caused the convulsions, or, "There is still another possibility of intoxication for our new-born; it had been put to the breast repeatedly and certainly some colostrum was sucked and absorbed. This colostrum may have been the vehicle through which the toxic matter was carried into the new-born's organism. Mentioning these possibilities I am fully aware that I move on the unsafe ground of theoretical speculation. But the case remains decidedly interesting; the mother suffering from a severe nephritis of pregnancy goes through parturition without eclampsia; the new-born to all appearances normal and healthy is taken with general convulsions resembling those of eclampsia parturientum."

In the review of this article for the *Zentralblatt f. Gynäkologie*, the writer concludes his résumé in the following line: "Surely this case is not without the greatest interest to the followers of the theory of the toxemia of eclampsia."

Kreutzman in reviewing the possibilities for such an eclamptic accident states that it may be due to toxic influence during life *in utero*, or to the passage of toxins from mother to child through the breasts. Why separate the two at all? It has been proven

beyond the shadow of a doubt that children of eclamptics or nephritics are children with a vitality below par. They come into the world diseased as to their several organs, and diseased especially as to their kidneys. That means clinically lowered power of assimilation, but it means more it means diminished power of elimination through diseased kidneys. Hence in the diseased state of fetal toxemia the poisons in the colostrum are but "the last straw." To many, as we have seen, this "last straw" was unnecessary, for the children passed into the eclamptic state before they nursed at all. And just as not all children have suffered equally before birth, so will they not all suffer alike from toxic nursing. The degree of disease in the new-born will be in direct proportion to the length of time to which it has been subjected to the poisons *in utero*. But it will depend also upon one other factor, viz., how long it will have been *in utero* after the mother's true eclampsia has set in.

Too much stress cannot be laid upon these two last factors, yet of the two the second is the more important. Seldom it is that children of eclamptic mothers die *in utero* before the maternal eclamptic convulsions set in, but they usually succumb during or shortly after a seizure. The immediate cause for the onset of the convulsions in the mother is found in the uterine contraction, just as the cause of the fetus may be laid to the same score.

When studying in the Obstetrical School of Paris I was taught—and I am a firm believer in the teaching—I was taught that eclamptic attacks seldom if ever come on in pregnant women without uterine contractions having set in. They find the immediate cause in uterine contraction inasmuch as this pumping action of the uterine muscles throws a large amount of toxins into the general systemic circulation. We have every reason to believe that the cause of eclampsia is the pregnancy and the cause of pregnancy is the fetus with its appendages. Removal of these, or even death of these, generally brings about a cure. The toxin therefore is generally thought to be of fetal origin. Therefore compression of the large uterine lymphatics and cavernous sinuses, as well as compression of the whole of the uterine contents throws a larger amount of maternal toxins than the maternal tissues are wont to receive in a given time. The result is a flooding of the maternal organism with the noxious products and this finds its expression in an eclamptic convulsion.

Prior to the onset of the attack the woman may not have been

conscious of any uterine pain. This is not a strong argument against the presence of uterine action, for pains frequently go on for a long time without causing any marked impression upon the consciousness, and especially is this aided by the mental torpidity more or less profound which so frequently precedes an eclamptic attack. Moreover, how often is this the case that you are called to an eclamptic who has had one seizure; she is still conscious; has no knowledge of labor having set in, yet when you examine you are able to say that labor certainly has started. Dilatation is advanced sufficiently to let you know at once that labor is on. This is the rule and not the exception. On the other hand, the teaching in most of our schools is that the convulsion starts the labor.

What is the effect upon the fetus? Why may it remain *in utero* for weeks before the eclamptic seizure and suffer pathological change in all its organs, yet so seldom succumb? Whereas with one eclamptic seizure it may die *in utero*, or if it does not die will suffer more and more with each maternal spasm. The causes of death are two in number. Most seem to die of asphyxia due to the prolonged spasm of the maternal respiratory muscles together with the prolonged uterine spasm. But not a few die before birth as a result of eclamptic seizures. As proof of this three cases are on record (Dohrn, Dienst, Ebinger) in which during Cesarean section perfectly rigid dead children were removed whereas the offspring were living at the time of the beginning of the Cesarean operation. These children passed at once seemingly from a state of eclamptic tonus to the rigidity of death.

In what do my three cases resemble that of Kreutzman and of others? In all of them the clinical picture was the same except for one fact, namely, that in my cases there was not a true eclamptic seizure in any of the children, but there were rigidity of the muscles and muscular twitching. In other respects there was always the somnolent state, the cyanosis, the irregular—now slow, now rapid—shallow breathing, gradually growing slower and finally ceasing; strong cardiac action long after cessation of breathing; prolongation of life for a considerable time by artificial respirations; absence of nausea and vomiting, or of signs of disease in any of the systems. The symptom-complex of the disease set in in apparently healthy children without other cause than nursing. Such was exactly the cause also in Kreutzman's report. Granted then that these three cases succumbed to, and Kreutzman's case was seized with convulsions from, the milk of

toxic mothers, can a means of preventing such untoward effects be suggested? A consideration of the foregoing cases allows of an easy solution.

1. In a mother profoundly toxemic and jaundiced, I think it will be well to feed artificially for quite a few days, and have the breasts pumped dry once or twice after the maternal toxemia has improved and before the child is allowed to nurse.

2. If the maternal convulsions come on postpartem (these are the most dangerous cases for the nursing infant) then allow the maternal elimination to go on until she is freed from the greater part of her toxemia and then empty the breasts before allowing the child to nurse.

3. Does the albuminuria persist after gestation, it will be well to feed artificially throughout.

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153 METCALFE STREET.

THE FACTORS CONCERNED IN SPONTANEOUS RUPTURE OF THE UTERUS, WITH REPORT OF A CASE.*

BY

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Philadelphia, Pa.

MRS. M. D., age thirty-six, white, VI-gravida, fell into labor at term on August 20, 1909, at 7 A. M. Her previous labors had been precipitate in character; no miscarriages; pelvic measurements: spines, 25.5 cm.; crests, 28 cm.; external conjugate, 19 cm.; diagonal conjugate, 12.5 cm.

Early rupture of the membranes was followed by active pains. The patient completed the first stage in four hours. With the accession of expulsive pains the head rapidly descended to the pelvic floor. As the head appeared at the vulva the pains suddenly ceased and the patient became conscious of the recession of the head. On vaginal examination the presenting part had disappeared entirely from its position in the vagina.

On admission to the Philadelphia Lying-in Charity the patient was moderately collapsed, with signs of internal bleeding. Pain was moderate with absence of uterine contractions. The abdominal muscles were lax. The abdomen was pendulous. The

*Read before the Philadelphia Obstetrical Society, December 1, 1910.

fetus was detected lying beneath the abdominal wall. The patient was given ether, in order to confirm the diagnosis of uterine rupture, with the intention of operating at once should this be the case. On introducing the hand within the vagina the cervix was found intact and the uterus contracted. On the right side the fornix vaginae was extensively lacerated, the tear involving the posterior as well as the lateral region. The opening in the vagina was large enough to admit the hand. The examination was followed by free bleeding necessitating hurried preparation for operation. Upon incising the abdominal wall the cavity was found filled with blood. The dead fetus and the placenta, having escaped from the uterus, were found free in the abdominal cavity. The fetus weighed 9 pounds 8 ounces. It was free of surrounding amnion, the sac having ruptured. The fetus and placenta were rapidly delivered. The pelvic cavity was walled off with gauze and the clots sponged out. A complete rupture of the uterus, in addition to that of the vagina, was found situated to the right and somewhat posteriorly, involving the lower segment and extending into the broad ligament. It was of sufficient length to permit the escape of the fetus into the abdominal cavity, although the opening was found practically closed through the more or less firm contraction of the uterus. There was extensive oozing from the edges of both the uterine and vaginal rupture. The membranes were still partially attached to the uterine wall.

The uterus was amputated at the cervix. Hemorrhage from branches of the inferior vesical and middle hemorrhoidal arteries, severed at the site of the vaginal laceration, embarrassed the operation. The rent in the vagina extended posteriorly, involving the retroperitoneal space below the bifurcation of the aorta in the common iliacs. It was difficult to close the vaginal rent, owing to the friability of the tissues.

Mattress sutures, including extensive areas of bleeding, controlled the hemorrhage, although gauze packing was used as a safeguard.

Symptoms of pulmonary infarction developed on the third day. The patient suffered from an embolic pneumonia from which she recovered. She was discharged on the fifty-seventh day after operation.

From a clinical point of view this case offers nothing distinctive except the unusual opportunity for treatment. Such extensive laceration and delay in treatment usually mean the death of the

patient. The occurrence of hemorrhage and thrombosis resulting in the pulmonary condition pointed also to the possibility of a much more serious infection than was actually met with. The location of the fetus in the abdominal cavity was the result no doubt of the expulsion of the body of the fetus through the uterine vent at the moment of rupture both of the uterus and vagina. This accounts also for the sudden recession of the head.

It is in the etiology, however, that interest in the case centers. At first sight the mechanism of the double laceration seems difficult to explain. Rupture of the vagina in labor is not unusual. It occurs most frequently by the extension of the uterine laceration outward at the vaginal fornix. In the present case, however, the lacerations were not connected except in that the parametrium was involved. The cervix was intact and intervened between the rupture of the lower segment and that of the vagina.

In uterine rupture the thinning of the lower segment is accompanied by retraction and thickening of the fundus. Under these circumstances the expulsive force which is transmitted to the fetus endangers the uterus. Should the ligaments of the uterus be elevated by the retraction of the fundus the support which is ordinarily offered by them to the lower segment would be removed. If at the same time fixation of the cervix through compression should occur, rupture becomes imminent. Thus the lower segment, fixed at one point by the upward traction of the fundus and at another by the imprisonment of the cervix, would be unable to resist the distention of the advancing fetus and rupture would result.

These considerations are involved to some degree in the etiology of the rupture in the present case. One exception, however, occurs; that is, as to compression of the cervix between the head and pelvis. This ordinarily depends upon a degree of pelvic contraction altogether absent in this case. Early dilatation of the cervix also made it possible for the lower segment to be liberated by the upward retraction of the cervix as the head descended into the vagina.

It is apparent, therefore, in this case that the mechanical must be supplemented by the pathological factor. Considering the comparative rapidity of labor and the advanced position of the head at the time of rupture, the question of obstruction is not to be seriously considered. It is of course likely that the contraction of the upper part of the uterus was accompanied by a proportionate thinning of the lower segment, but this could not have

of itself invited rupture in the absence of obstruction with fixation of the cervical ring, unless the uterine wall had undergone some pathological change, such, for instance, as is the forerunner of rupture in pregnancy and the beginning of labor. It will be noted also that the symptoms of rupture occurred when the head was visible. This is explainable by the impingement of the head upon the pelvic floor, stimulating the abdominal pressure. As a result the lower segment, already distended to the point of rupture, was suddenly overstretched by lateral compression from the fetal body.

As to vaginal rupture the conditions in the case were readily accountable for it. The patient had a pendulous abdomen, and the pains were strongly expulsive at the moment the fetus was forced through the retracting cervix.

In this connection two factors should be noted; first, the liability to rupture of the upper vagina in labor; second, the more or less severe rotary traction to the supports of this part of the birth canal by the descent of the head. As to the first we may quote H. W. Freund (*Handbuch der Geburtshülfe*, F. von Winckel, Zweiter B., 111 T., S. 2116), who writes as follows: "The vaginal canal in the lower third is strengthened, in contrast to the fornix, by the *columnæ rugarum* and, especially at the introitus, by the interlacing of the sphincter ani and the *transversus perinei*. The middle portion possesses a firm subtissue in the reflexion of the internal pelvic fascia and in the levator ani. The fornix vaginae is wanting in any such support, as is shown by the distance between it and the sacrum, the looseness of the connective tissue surrounding it and the lax attachment of Douglas' pouch."

In the present case not only these conditions, favorable to vaginal rupture, were present, but the want of coincidence between the axis of the fetus and that of the vagina, owing to the sagging of the abdominal wall, subjected the vaginal fornix to unusual tension. Freund lays stress upon the fixation of the lower uterine segment by the ligaments of the uterus. His theory is that the lower segment is not only supported by the ligaments, in the sense of their furnishing resistance to the distention of the fetus, but is also more readily retracted by the action of the muscular tissue in them. The forcible retraction of the cervix, in a case such as that under consideration, would thus favor the precipitation of the head into the poorly supported vagina.

As to the second consideration, namely, that of rotation, it is obvious that the rotation of the head may be accompanied by a

displacement of the vaginal vault resulting in rupture, especially in the presence of marked cervical retraction and improper descent owing to pendulous abdomen.

It is evident that the uterine and vaginal ruptures occurred at the same time, although different tissues were involved. Some preexisting pathological condition must therefore have been present. The pathological examination of the uterus (Dr. E. Eayre, March 24, 1910) revealed normal muscular tissue; some overgrowth of connective tissue, unusually rich in cells; normal serosa. Weigert's resorcin-fuchsin stain showed elastic tissue in abundance around the vessels and radiating from these throughout the muscularis and serosa in the amount normal for a parous uterus.

The significance of the connective-tissue formation may not be apparent. It is, however, reasonable to consider that the connective tissue may have served to replace the muscular fibers which have undergone atrophy. Ordinarily the parous uterus is rich in elastic tissue, but in the specimen in the present case it may be that the process of replacement has been carried on partly by the deposit of connective tissue instead of elastic tissue—either as a process somewhat lower in grade or at immature stage of tissue repair.

Fixation of the cervix by compression might account for both the uterine and vaginal rupture, as fixation of the cervix would be apt not only to put the thinned-out lower segment on the stretch, thus predisposing to rupture, but would cause the vagina to suffer the brunt of pressure as the head is suddenly forced into the cavity of the pelvis. In this case, however, the course of labor, as well as the pelvic measurements, precludes compression of the cervix.

On the other hand Freund asserts that the contraction of the round and uterosacral ligaments serves of itself, irrespective of compression, as a means of fixation. If we consider this functional fixation of equal importance as that of compression fixation we may be justified in regarding it as a factor not only in causing the uterine rupture, as described above in connection with fixation of the cervix, but the vaginal rupture as well, by means of forcibly retracting the cervix at a time when the vagina was not prepared to support the sudden descent of the head.

To summarize:

The cause of rupture in the present case depends apparently upon the following factors:

1. Tissue change in both vagina and uterus predisposing to rupture.
2. Undue retraction of the cervical ring.
3. Functional fixation of the attachments of the lower uterine segment.
4. Laxness of vaginal attachment in the upper zone.
5. Improper axis of descent of the fetal head by reason of pendulous abdomen.

1709 SPRUCE STREET.

THE VALUE OF LOCAL TREATMENT IN GYNECOLOGICAL CASES.*

BY

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New York City.

So much has been written on the surgical treatment of gynecological cases that it is right an occasional paper should be devoted to the medical treatment, if there is any real value in such methods. It is my opinion, after fifteen years' experience in local treatment of gynecological cases, in both private and hospital work, that the value of the same is much underestimated by surgeons, and not fully appreciated by physicians in general practice; and the object of this paper is to bring out a discussion which may more clearly define the dividing line which separates those cases which should receive local treatment, and those which are amenable only to operative procedures; also to emphasize the value of local treatment as an adjunct to surgery both before and after operation.

The early history of gynecology was the history of local treatment and much opprobrium was heaped upon those who expected too much from the use of the tampon and the douche, but it is a grave question as to whether there is not danger of going to the other extreme in surgical treatment at the present date. Can surgery be offered as a cure for all gynecological conditions any more than local treatment? Is it not a combination of both forms of treatment that will give the best results? The amount of actual benefit derived by patients who receive local gynecological treatment is exceedingly difficult to determine for the reason that records of the progress of the cases are hard to keep in the clinic, and patients are very apt so soon

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as they feel relief, to cease their attendance, records being, therefore, very incomplete. In private practice our records are much more satisfactory, but not so voluminous. The points upon which one has to base his judgment of the improvement of a case are confined to an inspection of the parts, palpation of the pelvic contents, and the testimony of the patient. Inspection can be applied only to those cases where the lesion is situated externally to the cervix. Palpation to be at all valuable must be done in a proper manner and at regular intervals, and recorded on the history chart. The record of patient's testimony as to her feelings, while not absolutely reliable, is of value. Nonsurgical methods of treatment are so familiar that it is perhaps unnecessary to enlarge upon them; but the occasional discussion of ordinary methods in the curing of disease is of value to the specialist as well as the general practitioner, and my excuse for bringing the subject before you this evening is that attention may be called to the benefits to be derived from nonsurgical care in gynecology. I do not wish to be considered as adverse to surgery, neither do I wish to express too great confidence in local treatment, but I am fully convinced that there is much to be gained by this work. Local treatment or, perhaps, better, nonsurgical treatment, may be divided into three heads: (1), hygiene and general care; (2), treatment applied directly to the affected parts; (3), treatment which may be carried out by the patient at her home.

1. *The value of general medical care and hygiene* cannot be overestimated as adjuncts to the work of the gynecologist. A patient who is suffering from autointoxication, anemia, and general malassimilation so common among our younger patients, will be little benefited by any course of local treatment or operation; on the other hand, her gynecological condition may be such that the improvement of her general health may improve, if not cure, her local trouble; and if the general health is neglected little can be hoped from a most skilled operation. Hygiene, proper clothing, exercise, proper sleeping quarters, proper diet, and especially the care of intestinal toxemia and constipation should be ensured. Tonics, looking toward the improvement of the appetite, digestion, and anemia are most important. As to general medication, I have obtained most satisfactory results from the use of glycerophosphate of soda in 15 gr. doses in a glass of hot water one hour

before meals, combined with calomel 1/10 gr., and with 3 gr. of soda every four hours. Even with those employed in confining occupations, if the physician is energetic enough to convince his patients of the importance of such measures, it is possible he will be able to persuade them to take proper exercise daily, followed by a cold shower and a rub down, laying strong emphasis upon the sleeping in a well-ventilated room, if possible out of doors. The regulation of the constipated habit, when it is not obstructed by pelvic growths or misplacement, is one that requires most careful attention from the physician. Massage and carefully carried out gymnastics are of great advantage where the patient's financial condition will allow it. Suggestion as to what constitutes proper living, both from a mental and physical standpoint, should not be neglected. As is well known to every practitioner, the mental condition of many of these patients is most distressing, often their surroundings are most unsatisfactory, but no point should be neglected, and no detail is apparently too unimportant. If your patient feels that you are painstaking in your instructions, and interested in her welfare, the resulting confidence will often lead to disclosures that will throw much light upon conditions that may hamper the care of the case. I am well aware that this method of procedure takes time, and in much of the work which is done in hospitals is often impossible.

2. *Local treatment as applied by the physician.* A careful history is essential to diagnosis, and a positive diagnosis is essential to successful treatment. This is more true in gynecology than in any other branch of medicine. After the history is taken the patient is ready for examination. Examinations made except on a proper table are so unsatisfactory, that only where the circumstances demand it should they be made. The examination should be made with the patient properly prepared, bowels and bladder emptied, corsets removed, and all waist bands loosened. Inspection of the external genitalia should always be the first step, followed by digital examination, examining the right side of the pelvis with the right hand, and the left side with the left hand. Rectal and recto-vaginal examination will often assist. Examination should be made at intervals during the course of the case, and records of the findings kept. If inflammatory conditions of the external genitalia are found they should receive proper treatment. In many cases conditions of the bladder and rectum are

complications of gynecological cases, and should not be neglected. Ulcerations and erosions of the cervix, due either to infection or endometrial discharge, should be treated. The condition of pelvic congestion is one that cannot be neglected where there are no gross lesions found. Endometritis, infectious or glandular, may be treated locally, and often cured without operative procedure. Local pelvic peritonitis and tubal infections, even where there is considerable swelling of the tubes, may yield to local treatment if it has not gone on to suppuration. The relief of a cervical stenosis or replacement of a retroverted uterus will often relieve the pelvic and uterine congestion which have kept up the symptoms for a long time. I will pass without comment the pathological conditions of the external genitalia, but a very interesting and instructive paper might be written upon this subject alone. A routine treatment which I have carried out in private practice and hospital work for a number of years may be outlined as follows: the external genitalia are cleansed by a boric acid solution and dried. If an acute inflammatory condition is present the same solution is used upon a cotton swab and the vaginal canal is cleansed. Crude pyroligneous acid is then applied to the external genitalia and the vaginal canal. The speculum is then introduced and the cervix cleansed with boric acid solution and the application of crude pyroligneous up to the internal os. Iodin is then applied to the cervix ulcerations. Where a more active agent is required, carbolic acid and iodine are useful. Pure carbolic acid or an actual cautery may be used. Cysts of the cervix are punctured. Scarification of the cervix may be done for the relief of uterine congestion. Tampons are of actual value and may be divided into alkaline, antiseptic, specific antiseptic (as argyrol in a 20 per cent. solution), hygroscopic (as glycerin, boroglycerid), hygroscopic with analgesics. In this category we have no more valuable drug than ichthyol. I use ichthyol, 10 or 20 per cent., in glycerin, 10 or 20 per cent. in boroglycerid or combined with iodine, carbolic acid, boroglycerid and hydragristis; pipe clay, glycerin, and ichthyol, or pipe clay and glycerin alone, making a most serviceable and supporting tampon. The method I have used of tamponade is an application of medication upon absorbent cotton held in place by tampons of lamb's wool. The frequency of treatment should vary with the acuteness of the condition from daily to once a week or less often. Irritant applications must be intermitted

if the treatment is frequent, or the vaginal mucosa will be damaged. Applications either by applicators or syringe may be used in the uterine cavity with great advantage. Electricity, faradic, galvanic, or ultraviolet rays are advantageous to the treatment. It is my conviction that all treatment, vaginal or intrauterine, should be carried out with surgical precaution, as it is unpardonable to use a dirty or possibly infected speculum; and the mental affect, even if no surgical harm occurs, is distressing to a sensitive patient. Dilation of the cervical canal with Hank's dilators for the relief of stenosis and dysmenorrhea or the use of a stem pessary, are easily carried out under careful asepsis in the office; also the replacement of a retroverted uterus which is nonadherent and where other pathological conditions do not exist, may be made in the office, and a properly fitted pessary applied.

3. Methods that may be carried out by the patient in her own home are, in addition to those mentioned under the first heading, douches and postural treatment. The use of the vaginal douche by the patient is a most valuable adjunct to the gynecologist in the care of his cases; but, as usually carried out by patients, is of practically no value and, therefore, such cases should be given most careful instructions, and the importance of carrying out the same impressed upon her mind. In questioning many patients, I have found that they have used the douche in the sitting posture, using a pint to a quart of water. This procedure is quite valueless. A douche should be from 2 to 12 quarts at a temperature from 100° to 120°, taken in the recumbent position, either on the bed with a douche pan or in the bath tub. A fountain syringe is without question the best instrument, with a glass Chamberlain tube. The flow should be slow and the temperature should be maintained. Medication of the douche is at times important, if its action is not intended to be mechanical only. The most simple form of medication is a teaspoonful of common salt to each pint of hot water. Borax and boracic acid in the proportion of a tablespoonful to each 2 quarts, or a combination of borax, bicarbonate of soda with the addition of menthol, make excellent and inexpensive douches. Lysol or carbolic acid in 1/2 to 1 per cent. solution, bichlorid in a solution of 1 to 10,000 or 1 to 20,000. To loosen discharge I have frequently had patients introduce 2 ounces of peroxid of hydrogen into the vagina through the fountain syringe five minutes before taking the douche. Where specific medication

is required, a cleansing douche of saline or alkaline solution may be used, and the specific medication put in the last doucheful. It has been my custom to have patients rest one hour if possible after taking a prolonged douche, and if there is pelvic inflammation, to rest with an ice-bag applied to the lower abdomen. Postural treatment may be advantageously carried out by the patient to rest an anteflexed and anteverted uterus by assuming the Trendelenburg position. In cases of retroversion, rest upon the face, or the knee-chest posture will often give relief. I have been very skeptical as to the value of suppositories, medicated tampons, etc., introduced by the patient, as it has always been my opinion that a tampon to be of any value must be introduced with surgical precaution, placed properly, and held in position by a dry tampon.

The cases in which local treatment is of value may be outlined as follows: inflammation of the external genitalia, infections and inflammations of the urethra and bladder, many conditions of the rectum and anus not mentioned in this paper, inflammatory and infectious conditions of the vagina, cervix, and endometrium, erosions, ulcerations or cystic degeneration of the cervix, cervical stenosis, uterine and pelvic congestion, local peritonitis, tubal infection, retroversion, and the inoperable uterine prolapse of elderly patients. Preparatory to operation, local treatment has seemed to me to be of great value both in private and hospital practice. In the relief of postoperative pain, and absorption of exudate left after operative procedures where infection had existed, the results have been most satisfactory. It is such a frequent occurrence to have patients come to the clinic from the general service of the hospital with "postoperative misery" that must be relieved in order to allow the patient to recover her normal health, that some method of treatment is imperative.

In bringing before you an outline of this work with which you are all familiar, I do so in the hope that it may call to the attention both of the general practitioner and of the specialist, that while gynecology is a surgical specialty in the main, there are many conditions that cause much discomfort which can be relieved by methods that are not operative.

PELVIC REFLEXES.¹

BY

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I SHALL occupy but a few minutes in outlining a subject which I think still needs attention. Pelvic reflexes are afferent and efferent. We do not always distinguish between the two. It is very important that we should so distinguish. When I was a student there were certain questions in gynecology, then and before, which included this question, "shall the doctor support the perineum or shall the perineum support the doctor?" At the present moment we have arrived at the stage where it is a question if pelvic reflexes shall support the surgeon any longer; whether this phase of surgery is to be set aside by our new knowledge, and if we are to take up lines of cleavage which have been opened to us recently, but which we do not recognize very well as yet.

In a certain proportion of our patients with pelvic reflexes we find the neurotic habit. These patients are neurasthenics. If we take out one ovary for pelvic pain in this class of patients the patient is just as badly off as before the operation. If we remove the other ovary, the patient is just as badly off as before, and if we take out the appendix—it has been the custom to remove everything that was not nailed down—it is the practice that has brought opprobrium upon surgery because we have not been sufficiently acute in making correct diagnoses.

These neurotic patients must be dealt with by the surgeon with a great deal of intelligence. They represent a class calling for surgery sometimes; they represent a class calling for the clergy sometimes; they visit the clergy for sympathy and have driven a number of good clergymen out of religion into the real estate business. These patients crave surgery. But beware of a lot of these patients with pelvic pains, with "ovarian and tubal trouble," with neuralgic pains of the neurotic or neurasthenic type.

Other characteristics go with that condition. First, commonly will be found a tendency to a slender figure. Next, there is a

¹Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

tendency to carry various stigmata common to this class of patients. There are errors of refraction often. All these things lead us up to the second step. Now then, if we are dealing with the second class of patients, the neurathenic patients, who have marked errors of refraction with pelvic pain and pelvic distress, how are we going to handle them? If we relieve the muscle imbalance and the error of refraction, are we going to hold the patient? Yes, and no! In some of these neurotic patients that muscle imbalance and the errors of refraction are just enough to precipitate the symptoms. They are not causative of disease. They are not causative directly of a morbid process, but they stand in the relation of precipitating factors, and if we relieve the precipitating factor or factors which upset the patient from time to time we will relieve that patient very much of the symptoms which are making demonstration in the pelvis. More often these symptoms may be referred to the stomach. These patients often are known as dyspeptics, and we all remember in our books the picture that is given of the dyspeptic; and this is so very often a neurasthenic inheritance, so to speak. Perhaps these errors of refraction, perhaps the muscle imbalance, and other symptoms are demonstrated through the semilunar ganglia.

In many of these patients the demonstration is in the pelvis. They go the rounds of the medical profession. They go from one doctor to another, they are the subjects of eternal tinkering by the gynecologist, and nothing is accomplished. This, in brief, introduces the question of afferent reflexes, of reflexes from a distance into the pelvis, disturbances in the pelvis, manifesting themselves there with a real cause or causes, or causative factors at a distance.

From the other side we have the efferent group. We have, for instance, a group of disturbances proceeding from a scar of the cervix, and we are going to determine whether we are to operate in a case of reflex dyspepsia with a torn cervix. Very many patients have torn cervices. Most women who have borne children have torn cervices. But does the torn cervix require an operation? Do we do the right thing if we operate simply because we find tears and scars? No. We are not to operate in such cases unless we have a definite reason for doing so. The Emmet sign is one of great consequence. If you press on a scar of the cervix with your finger-nail or with the sharp point of a retractor, and bring out instantly that reflex, that

case is one which requires an operation for reflex disturbance. If you press on the scar and the patient does not know it, or if you press on another scar and the patient does not know it, do not operate on that case, no matter how much the cervix is torn, for relieving the reflex disturbance. You may operate, if you please, for a tear which evidently requires repair on general mechanical principles, but not for the object of stopping an efferent reflex.

In another class of patients we find irritation in the pelvic region proceeding from a fibroid degeneration of the appendix. How are we to know in a certain case whether irritation or efferent reflex proceeds from the fibroid appendix or from the scar in the cervix? With a scar in the cervix both groups of lumbar ganglia are hypersensitive to pressure. With the appendix the right lumbar ganglia alone are hypersensitive. Observe the rule that an efferent pelvic reflex may frequently be traced to its source by the testimony given by the patient of the relative degrees of tenderness of the lumbar ganglia.

I do not wish to go into an elaborate discussion of this subject this afternoon excepting to say that the time has come when we must distinguish between afferent and efferent pelvic reflexes; we must stop ill-advised operating upon neurasthenic patients with symptoms in the pelvis, although we must believe that it is worth while to remove the precipitating peripheral irritation in a certain proportion of cases in which it is not a causative factor of the pelvic disturbance.

616 MADISON AVENUE.

TWO CASES OF PERFORATED GASTRIC ULCER.¹

BY

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Indianapolis, Ind.

THESE should be viewed as cases of peritonitis due to perforated peptic ulcers. The first is that of a man forty-five years of age. For several months he has had continuous trouble with his stomach, pain, distention, belching and vomiting being the prominent features. And all during these months he has been compelled to be very careful as to the quality and quantity of his food.

¹Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

On a Wednesday afternoon a short time ago he was seized with an acute pain in the abdomen slightly above the umbilicus. Nausea followed and in the course of a little time he vomited once. The pain about the umbilicus continued and extended over the entire abdomen, which rapidly became distended. During the evening of the same day his physician was called, who suspected that he was having an attack of fermentative dyspepsia and administered a purgative. During that night and the next day he was given calomel, 4 ounces of Epsom salts, 4 1/2 ounces of castor oil, 1/2 pint of albolene, and during the second night some capsules containing croton oil. The last drug was suggested by myself over the phone, without having any definite knowledge of the pathologic conditions in the case. In this I did a great wrong; and who is the surgeon who has not done it probably many times?

I saw this case for the first time on the following Friday afternoon. He was then sitting propped up in bed, with a pinched, distressed expression. His face was bathed in cold perspiration. He was dyspneic; his pulse, weak and thready, was running at 130. The abdomen was exceedingly distended, everywhere tympanitic and very sensitive to palpation. Points of greatest tenderness were found 3 inches above umbilicus, in right semilunar line, and in the appendicial region. There was a marked general superficial capillary stasis, most pronounced over the abdomen. The colon had been emptied early by high enemata, but there had been no general bowel movement since the beginning of the attack. No vermicular movement could be detected by either inspection or auscultation. Auscultatory palpation revealed that which I have several times observed before, a crackling, squeaking noise, caused by inflamed and roughened coils of intestines rubbing against each other. A widespread peritonitis could be easily diagnosed, but I was very much in doubt as to the primary cause. Appendicitis, perforation of the gall-bladder, peptic ulcer, volvulus, and constricting bands of adhesions were thought of and held *sub judice*.

The gravity of the conditions was explained to the family, and the patient removed to the Methodist Hospital and prepared for immediate operation. An incision was made to the right of the umbilicus, splitting the fibers of the rectus muscle. As soon as the peritoneum was opened, there burst through a large quantity of seropus; flocculi of coagulated lymph, partially digested food, and the oils which had been given him the day

before. I did not discover any of the capsules of croton oil I had suggested. The coils of intestines came bouncing out. Those of the small bowel were distended, very dark and edematous, and in many places covered by white plaques of lymph. Extension of the incision upward brought immediately into view a round hole in the anterior aspect of pylorus about 2 inches proximal to the sphincter. This opening was about $\frac{3}{8}$ inch in diameter, had a gray necrotic border still discharging and not surrounded by adhesions. It was closed at once by mattress suture, with chromic catgut. Extending the incision downward, the intestines were entirely removed from the abdominal cavity. A coil of jejunum on the left side and another of ileum on the right side was dragged well to the side of the patient, opened, and the intestine drained of its contents. This required considerable stripping of the gut between the fingers. About 3 quarts of dark, foul-smelling fluid was removed from the bowels in this way. Openings in bowels were next closed with silk. The bowel was now completely collapsed, and it was very gratifying to see it at once change from dark, dingy, cyanotic color to a bright, pink, healthy hue. Next, gallons of warm salt solution were poured over the coils and through the well-opened abdominal cavity. Every nook and corner of the cavity was thoroughly washed and sponged clean with gauze. The abdomen was next closed, two drainage-tubes being introduced, one in the upper angle of the wound extending down to seat of ulcer, and the other in the lower angle to drain the pelvic cavity. A stomach lavage was now given until return water came clear. During the operation a median basilic vein was opened and 1000 c.c. salt solution was given. Patient was put to bed with better color and pulse than he had when he went on the table, and made an uneventful recovery.

The second case I saw four days after the first. A young woman nineteen years of age had been seeing her physician for stomach disorder for about two months. She, like the first patient, was taken with severe pains in the abdomen just above umbilicus. She vomited once a short time after onset, but continued to have pains, abdominal distention with rigidity, and fever. I saw her forty-eight hours later, having been called to operate for appendicitis. Her symptoms were very similar to those recorded in the former case—namely, leaky skin, rapid pulse, general cyanosis, abdominal rigidity with distention, no bowel movements, pains and tenderness in upper right

abdominal quadrant. No induration or swelling, but auscultatory palpation elicited same squeaky sounds previously described. I was in this case able to make a correct diagnosis and did an immediate operation for perforation of the pylorus by peptic ulcer. Here I found the same kind of an ulcer as in the first case. The abdomen, however, did not contain food particles, and the intestines were not so much distended. I did not open and empty the bowel or flush out the abdominal cavity. After closing the hole in the stomach and carefully sponging the region clean, the abdomen was closed with drainage. This case recovered, but did not do so well as the other. She suffered much with gas, ran a temperature, and after about ten days discharged some pus apparently from a nidus not reached by the drainage-tube.

These cases are the first and only of their kind I have been called to attend. And from what I have been able to gather by inquiry, I believe they are of so infrequent occurrence and of such serious nature as to warrant a little consideration of them here.

The pathology and symptomatology are very analogous to perforation of any hollow viscus of the abdomen. Diagnosis must depend upon the recognition of a demonstrable peritoneal insult as evidenced by sudden, severe pain about the umbilicus or epigastrium with focal tenderness followed by vomiting and the general symptoms of shock. Careful inquiry reveals a period of gastric disorder antecedent to the acute attack. Symptoms of acute peritonitis, more or less general in character, rapidly ensue, and it may be that they will overshadow all others at the time of observation as happened in the first case reported in this paper.

The vomiting of general peritonitis due to other causes has been continuous in my experience. But in these cases it occurred only once and that very early; that is, at the time of perforation. It was not present in either case during the progress of the peritoneal inflammation. "It takes more than one swallow to make a summer," and it takes more than two cases to establish a symptom. But if it can be shown that vomiting occurs only at or about the time of perforation, and ceases during the progress of the peritonitis which follows as contradistinct to peritonitis due to other causes, a little more will be added to elucidate the problems of diagnosis.

IMPORTANCE OF PUBLIC AND PRIVATE HOSPITALS
IN THE EDUCATION OF YOUNG PHYSICIANS AND
NURSES, AND THE CLINICAL INSTRUCTION
OF PRACTITIONERS.¹

BY
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THE private hospital continues to live, and I think probably in the midst of a lot of supervised general hospitals the institution is quite as important, from an educational point of view, as it was in its early history. I regard the private hospital as largely responsible for the important specialties, and I value it most highly for the great work it has done along these lines. I insist that in educational centers, like New York, Boston, Baltimore, Philadelphia, Chicago, and New Orleans, the specialties should be advanced. If it is necessary to send your wife or child to be operated upon it is acknowledged that the best is not too good, and you want the ablest and the most refined specialist whose services can be obtained. I think we should aim in our work at that refinement that has been acquired in the treatment of diseases of the eye or in any of the specialties we have under consideration here.

Private hospitals had their origin in this country, and they gave us the specialties. They also gave us the nursing profession, another specialty which we esteem and value very highly. Our advances are largely due to the assistance and support we have had from the nursing specialty. All of us have seen recent allusions to the death of that queen of nurses, Florence Nightingale, which tell the whole story. With the decimation of wounded and afflicted in the English and allied forces in the Crimea, the mortality was reduced under her administration from 50 or more per cent. to 2 per cent., and the pest-houses were soon cleaned up. And this little queen of nurses met the prejudice of all classes for a time against her progressive humane work. She met an officer and asked him to open number six or seven. He refused and she politely told him he would save her the trouble of breaking the doors. But

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it was a curious and interesting thing that this refined military commander, recognized not only the genius but the woman that possessed all these redeeming attributes of women. When he learned that she was ill he called for his orderly and horse and drove to her cabin, tapped on the door, and was informed by a Sister of Mercy that Florence Nightingale was ill with fever, and he could not see her. She recognized the voice of this military commander, tapped on the wall, told him that she was sick with fever, and that it would be dangerous for him to be admitted. The military commander said, "Madam, I fear nothing."

From this small beginning grew the private institution for that class of women that were going to do the work of mercy, not the scientific work, that came to her helpers. It was along these lines, in following her early efforts, we have the origin of Stone's work, and McDowell's work, who made a private hospital of his home, where his early work was very successful. It was free from sepsis, free from abscesses and the sequelæ of surgery which are so common now, and which give us what I have termed surgical junk.

It was precisely the early work of Sims with his private hospital, a little chicken-house, or wooden shed, or wagon shop, that enabled him to do so much, and he made those successful efforts after the profession had deserted him. If we will study his early trials and tribulations and the object lessons given by Sims in the direction of development of specialties, making trips to New York, New Orleans and Baltimore, we will find them very interesting reading. Sims made his way to New York and to Paris; but it was through Jefferson College, Philadelphia, the Gross School, the Pancoast School, that so many geniuses, so many specialists, received their education. Battey went South and gave us early surgery for obscure diseases of the female reproductive organs, for which he received much unjust censure. That simply meant ignorance on the part of the profession.

If you read carefully you will recognize that Battey's work was honest and done with pure motives. He established a private hospital and educated the members of his profession. Sims did the same, and so did McDowell and Hunter McGuire. Hunter McGuire not only created a private hospital and a new school for nurses, thus giving the people in the South a nursing profession, but he reeducated his profession. He created

schools and specialists in large numbers. No man has lived who made more good surgeons than Hunter McGuire. The doors of his private hospital were always open; you could enter without ringing or knocking. I rejoice that he has a son who is doing precisely the refinement of surgery that the father had practised so successfully. His mantle has fallen upon worthy shoulders.

There has been a prejudice against private hospitals, but they have never suffered from that warfare and condemnation and irregularity that have characterized many other institutions, simply because they have been managed by a class of men far removed from the possibility of irregular practices. Exceptionally do the private hospitals publish reports of any character of the work done in them. If I were to publish a report of my last year's work, giving the number of cases of ectopic pregnancy and the cases of suppurative forms of ovarian disease, the number of cases in which the appendix was removed, and the cases of peritonitis treated, the members of my profession would say at once, "What is wrong with Price?" I have never published a report of any character, and but few private hospitals in America have ever done so.

Beginning with the pioneers in the specialties, they did much work and created specialists. The nursing profession is doing much work at home and abroad; it is doing a great missionary work through Japan and China, through India and Africa, and I sometimes think that we are perfectly blind to the enormity of the missionary work which the members of the nursing profession are trying to do at home and abroad. This country is filled with a band of advanced thinkers and workers among the nursing profession, and they carry their counsel and good work into all the provinces. Many of these young women in acting as pupil nurses receive from ten to twelve dollars a month; they have labored night and day for three years before graduation, and their records of usefulness, their prominence, their great work of mercy have been larger than mine. In short, I would like to share more of their deserved prominence. Remember, I am talking about pupil nurses now.

I have alluded to the work of Battey and Sims and Hunter McGuire, and I probably have overlooked a few of equal prominence, but it will be impossible for me to mention all of them in this short talk. That past master, Emmet, continued to perfect the work of Sims with his ingenious operations for the repair of all

lesions incident to parturition, and these lesions are numerous and important and should be repaired. About a year ago I repaired some lesions, due to the premature use of high forceps, in the wife of a Harvard graduate and president of a college. He was a handsome fellow and she a lovely little woman. She was badly mutilated, with huge lips everted, and the lower end of the uterus larger than the upper end. I repaired her cervix, after the ingenious operation devised by Emmet for the repair of such lesion and then made a new pelvic floor for her. I promised her conception. I had many delightful chats with that intelligent little woman. I told her I wanted her to be a mother, and a few days ago she sent me a dear little note telling me that my hopes were realized.

And I rejoice that such a man as Emmet lived; he has been the means of arresting race suicide. But there is no one present who could not relate experiences of this character. Race suicide is due in many instances to pathological conditions. We have a great variety of race suicides. Social evils and vices are at the bottom of race suicide. It is difficult, if not impossible, to stop these evils. But we have made wonderful progress along these lines through the growth and development of our private hospitals and specialties. When I first talked about the social evils, after I read the paper of Noeggerath on the Latency of Gonorrhea which he wrote in 1876, at the beginning of our scientific progress, I met with a good deal of opposition on account of the views I then advanced. I was even asked to leave Philadelphia, whereas now it is simply impossible for me to accept all the invitations I receive to deliver lectures on the subject, even from the church pulpit with a big Bible to lean upon.

Following the work of these early pioneers, we had them all—Emmet, Gaillard Thomas, Paul F. Munde, Goodell, and the second school of great specialists, which gave us men like Clark, Kelly, Deaver, and a great number of advanced specialists such as I see before me—all serving our schools and hospitals throughout this country. Later appeared the specialists in the Southwest, the Middle West, and the East. These private hospitals serve as landmarks and as teaching institutions. They have always been wide open and, when running at their best, have been made more attractive and interesting than society meetings. Two years ago I happened to have had an abundance of clinical material during the meeting of the American Medical Association

at Atlantic City. The good practitioners from around the country paid me the compliment of coming to see what I was doing. They asked me many questions about the patients I was operating on, and many of them were so intensely interested in the surgical work and what they saw that they did not even attend the meeting of the American Medical Association. These practitioners get in private hospitals what they cannot get by attending meetings of the American Medical Association or in general hospitals. One distinguished practitioner, who has done so much theoretically and practically for his profession, was at my clinic and told me he had closed his private hospital. I asked him what was the trouble and he said he had been speculating in stocks.

I am sure we are all gratified to see that many of our general hospitals have been remodeled and that they are no longer pest-houses. It was the private hospital that cleaned up the pest-houses. Now, it would be an excellent thing if we could clean up medical colleges and make them fit for students to sit in. The average medical college is a dirty place, too dirty even for poultry or animals. In my private hospital doors are wide open. Practitioners can enter the operating-room at any time, and they come in at all hours without interfering with my surgical work. Some time ago there was a controversy between the ministers and doctors as to whether hospitals should be open to practitioners of medicine. I was asked to serve on the staff of one of them and I said that I would not serve on the staff of any hospital that was closed to my professional brethren; neither would I permit the trustees of such a hospital to tell me when I should do an operation or how I should do it. I find that some of the church hospitals throughout the country are closed to the profession, and I am ashamed that there are still brother practitioners who will serve such institutions. They ought to resign unless they can use their influence with success in reforming such hospitals.

I have presented simply the educational side of our private hospitals, and I know from a study of these institutions at home they have done great work. I find men distributed over Kansas, Texas, and other portions of the South and West who have had only meager opportunities, but who, after witnessing a few operations, have gone home with new and fresh knowledge and have done splendid surgical work unless, perchance, they are members of the Ananias Club. At all events, they have written me letters which I prize, and it is difficult to deceive about one's work

nowadays, because there are too many men watching and seeing what is being done. They talk about it, and if you lose a patient they know it in California in an hour or so, the news being transmitted by wireless.

I find that same condition of affairs in associating with members of my profession from abroad, and nothing gives me more pleasure than to allude to the kindness of our foreign specialists. I still go to all of their clinics whenever I have an opportunity to do so. I lunch with them, dine with them, travel with them, and I have received every kindness and attention possible in witnessing their operations. Men like Messieurs Keith, Tait, and Knowsley Thornton, and the old school of specialists, deserve monuments erected to their memories, because they have distributed throughout the the provinces of England a class of specialists that could not be developed in any other way. The general hospitals are not giving us the class of men and specialists that it should. There is something of which they are afraid. They have a peculiar self-consciousness. I asked Deaver not long ago why it is we are not making more surgeons, and he replied, "Damn it, they are too busy playing poker."

HIGH OPERATIONS IN CESAREAN SECTION.¹

ILLUSTRATED BY THE REPORT OF A CASE.

BY

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THE technic employed in the modern Cesarean operation has been so perfected and the indications for the operation so widened that it is now very frequently resorted to in order to give both mother and child greater chances for life. The rapidity in which this operation can be safely performed by an experienced abdominal surgeon is an important factor for the safety of the mother and the life of the child. Modern aseptic technic and favorable surroundings are essential and will insure practically a *nil* mortality, providing the mother has not already been infected by repeated examinations and efforts to deliver. In all cases in or near a city or town, where hospital accommodations

¹ Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

are modern, the patient should be transported to such an institution for operation and convalescence.

Many general practitioners throughout the United States resort to the use of forceps needlessly and are not impressed with the fact that the high forceps operation is a major one, that it requires the hand of an expert obstetrician and a trained mind to avoid serious if not fatal injury to the mother and the sacrifice of the life of the child. Add to this a careless regard for a strict asepsis and you have a combination that results in disaster so frequently to the mother and in the delivery of a stillborn child, or its death a few days afterward from trauma sustained by the instrumental delivery. Many practitioners resort to the high forceps delivery who would not think of undertaking a Cesarean operation. If they did and their technic was as careless as in the high forceps operation, the resulting mortality would be appalling.

The general practitioner should not resort to the high forceps operation without consultation with, and the aid of, an expert obstetrician. The tears we see to the birth-canal as a result of forceps are simply inexcusable. Then add to this infection, which occurs so often, and we have a deplorable state of affairs. The relaxation and displacements of the pelvic organs resulting are attended with suffering and invalidism.

Contrast this with the results from the Cesarean operation as now so quickly performed by experienced operators, and you have another picture that is as enjoyable as the other is horrible.

Indications for the Cesarean Operation.—1. Contracted pelvis. 2. Conjugata vera of 9 cm. or less. 3. Newgrowths in pelvis or pelvic brim. 4. Myoma, dermoids, and ovarian cysts that obstruct head in birth-canal. 5. Placenta previa centralis. 6. Failure of head to engage. 7. Rupture of varicose veins in vagina. 8. Exostoses. 9. Eclampsia. 10. Carcinoma cervix. 11. Marked displacement of cervix following ventral fixation of uterus. 12. Scar tissue in cervix or vagina.

In most cases the necessity for operation should be determined in advance and the time for operation should be soon after labor has commenced, thus avoiding the exhaustion that comes after prolonged labor. How few practitioners make exact pelvic measurements of their patients before or at beginning of labor. The preparation should be as thorough as for any other form of abdominal operation. The widening of the field for Cesarean section has brought out a simpler technic. This simpler technic has reduced the mortality to almost nothing. The cases that

now succumb to the operation are those in which infection has been introduced in the attempt to deliver by the use of forceps outside of hospitals, where the surroundings are filthy and preposterously inadequate.

"Less than a decade ago Cesarean section was considered an operation of doubtful expediency, only to be advocated in cases when the birth of a living child was at least improbable. The old statistics based on the operation performed upon exhausted women under inadequate asepsis were so uniformly bad that before the revised operation could win an established place in obstetrics it was necessary that a large number of favorable cases be obtained, in which the operation was absolutely indicated before its widespread application could be advocated.

"At first the question to be settled was, can the patient be delivered in any other way? If that question was answered in the negative, Cesarean section became the operation of choice, but no operator approached an abdominal delivery without great doubt as to what the outcome might be. With increased experience and improved asepsis and technic the question has come to be not, is Cesarean section absolutely necessary? but, is not Cesarean section safer than the other operative measures in doubtful cases? To-day this question can be answered definitely in the affirmative, that under proper conditions the patient can be subjected to operation at the time of election, not only with the feeling that all doubt as to the successful outcome both for her and the child have been removed, but also the assurance that, far from either her life or after-health being compromised by an abdominal delivery, an absolutely favorable prognosis can be given as in other simple abdominal operations, providing certain cardinal principles are followed out."

It is better to make the operation after the first stage of labor has progressed sufficiently to insure a dilatation of the cervix sufficient to insure free drainage. This is not absolutely essential, but desirable. The abdomen is prepared as carefully as is done for abdominal operations generally. High incision without eventration of the uterus is simpler, and devoid of shock. Handling of the intestines is avoided and the danger of infection greatly reduced. By high incision we mean from the umbilicus upward for 5 or 6 inches. After the abdominal cavity is open, long narrow gauze strips are packed around the uterus below the edges of the abdominal wound, and by pressure of the abdominal wall against the womb by the assistant's

hands, blood and amniotic fluid are shut out of the abdominal cavity. This will render sponging and cleansing of the abdominal cavity unnecessary.

Carefully incising the uterine wall so as to avoid cutting the child, separating quickly the placenta and membranes with a sweep of the fingers, the extremities are seized and the child quickly delivered, cord clamped and severed, and turned over to a competent assistant for his undivided attention. A large curved needle is used to insert interrupted chromic catgut sutures to unite the uterine walls. If one is first placed in the upper angle, tied, and left long for traction, another in the lower angle for the same purpose, it will enable the assistant to hold them so that the uterus does not disappear, and then the other sutures are readily placed and tied. The peritoneal edges are united with a continuous suture of catgut and the abdominal incision closed after removing the gauze strips.

Ergotol administered hypodermically after anesthesia is started will insure uterine contractions following the delivery of the child. The uterus in contracting is removed from the region of the high incision and prevents any adhesions forming at this point.

briefly I will report two cases to illustrate the points I have brought out. Both had contracted pelvis. The first case is one in which forceps was used, and a stillborn child resulted, the mother dying from pulmonary thrombosis days after. The autopsy report is included.

CASE I.—Death from pulmonary embolism following attempted forceps delivery and version.

Mrs. R. S., age nineteen, married one year two months. Housewife; menses began at fourteenth year. Regular, of the twenty-eight-day type, occasional clots; duration four to five days, seldom any pain no leukorrhea; no miscarriages. High forceps attempted and delivery by version. October 18, 1907: Patient became very ill and was sent to Charity Hospital October 22 for the repair of a complete laceration of the perineum and tear of neck of urinary bladder received during forceps delivery October 18. Patient complains that urine trickles into the vagina. Feces passed through vagina. She had sharp pains, occurring every two or three minutes, located in left iliac region. General appearance very anemic. Weight, 98 pounds. Complaints of frontal and occipital headaches. Appetite fair. Temperature, 99 4/5 to 101 4/5. Pulse, 120 to 124. Respiration normal.

Patient was delivered of a large child by attempted high forceps and version, stillbirth, October 18. Bladder, vagina, and

rectum lacerated, the latter through sphincter ani. Great loss of blood. Free escape of urine per vagina and also fecal matter through same route. Physical examination: Pelvis justo-minor. Vaginal outlet torn clear through sphincter ani. Vagina lacerated. Cervix bilateral laceration, extending on the left side to vaginal vault. Uterus enlarged.

Free pus discharged from sutures placed to repair the pelvic floor, perineum, and sphincter ani. These sutures were inserted after delivery at patient's home.

At the hospital sutures loosened by suppuration were removed, nonunion of sutured structures with free discharge of pus from torn edges. Careful cleanly expectant treatment was carried out. Later operation to restore lacerated structures was to have been done.

Temperature and pulse became normal by November 1. Tear in bladder granulated so that urine was passed normally, but the feces were still discharged through vagina.

On afternoon of November 5 some friends of the patient brought in a quantity of fruit and other food, unbeknown to nurses or house doctor. It was found out later that patient ate a quantity of the food and fruit. She was sleeping soundly at 11 P. M. November 5. About midnight the patient called the nurse and complained of giddiness in her head and of breathlessness. Respirations became more and more rapid and labored. Marked air hunger developed. Pulse became rapid and weak and finally imperceptible at wrist. Lips and finger-tips cyanotic and cold. Complained of feeling cold about chest. Face pale. Very restless and apprehensive look. Patient said she was going to die. Conscious to within five minutes of death. Became rapidly worse, and died at 1.30 A. M. November 6 A. M. in spite of all special stimulants and the administration of oxygen by the house staff.

Autopsy, 9 A. M., November 6, 1907.

Heart.—Apex in fifth interspace just inside left nipple line. Right auricle distended with dark fluid blood. No definite clots in heart. Valves competent. Heart muscles somewhat paler than normal. Pericardial fluid clear, about 10 c.c.

Lungs.—Both free throughout. No pleurisy. Lungs small, pale, and partially collapsed. No pneumonic process evident. On severing the left pulmonary artery a rather soft, friable, necrotic-looking embolus with adherent blood clot was found completely plugging the vessel. The pulmonary artery entering the right lung was found occluded by a similar embolus. In all probability the embolus had primarily lodged at the bifurcation of the main pulmonary artery and sent fragments into the branches going to both the lungs. The bronchi contained some frothy mucus. No distinct areas of infarction. -

Uterus.—Large, somewhat boggy; cervix lacerated. On opening uterus there was found near the fundus on the anterior wall a brownish necrotic mass, resembling closely the emboli

found in the lungs. The uterus was lined with shaggy necrotic tissue. A thrombophlebitis was found in the plexus of veins in the broad ligament. No distinct phlebitis could be made out in the iliac veins.

Urinary Bladder.—Mucosa thickened and inflamed. Granulation tissue filling up a recent vesicovaginal fistula near the neck of the bladder. The posterior vaginal wall was lacerated down through sphincter ani. Stomach dilated four fingers below umbilicus. Filled with fragments of food and acid fruits. Strongly acid, fermented odor to contents. Head not opened.

CASE II.—*The second case is one in which forceps were resorted to and after great effort the child was delivered dead. The mother sustained great injury to her birth-canal, was septic for a time, but finally was able to be about some, but remained a semi-invalid for two years, then underwent operations to restore the torn uterus, pelvic floor, and perineum to a normal condition. Recovered quickly, became pregnant in two months and was delivered by Cesarean operation of a living healthy child.*

Mrs. L., age twenty-four, height 4 feet 6 inches, weight 105 pounds, came to consult me January 6, 1909; married three years. Been pregnant but once, two years ago, child was stillborn, forceps delivery at her home, Philadelphia, Pa. Her menstrual history is as follows: Began at eleven and a half years, regular every twenty-eight-day type, duration two to three days, painless up to the time she became pregnant. Since birth of child suffers pain and flows too freely and passes clots, and it continues for five days. Leukorrhea since birth of child—stains her clothing. Complains now of the following symptoms: bearing-down pains in lower abdomen, backache, headache, occipital, pain radiating down thighs, nauseated at menstrual period, leukorrhea. Appetite poor, digestion disturbed, pain after eating, gas, bowels constipated, urination painful and frequent. Also complains of swelling in right groin which enlarges and comes down on coughing or walking.

The history of the development of her present condition is as follows: was well until the instrumental delivery of a stillborn child two years ago. Suffered great pain and had fever following and was confined to her bed for some time. Has been unable to regain her former state of health. Feels discouraged. Her general and family history is good.

Examination.—Heart and lungs normal. Abdomen normal except as to pain on pressure in both lower quadrants. Vaginal outlet large, vagina lacerated to sphincter ani, rectocele, cervix low down and lacerated on right side to vaginal junction. Uterus enlarged, prolapsed, movable, sensitive to touch.

The promontory of sacrum was readily felt by finger. Both tubes and ovaries palpable, right ovary slightly larger than left, but neither seemed abnormal. The cervical canal was filled with a mucopurulent discharge.

Operation January 11, 1909. Curetment, trachelorrhaphy,

perineorrhaphy, and radical operation for right femoral hernia. She made a rapid recovery and left the hospital in three weeks. At time of discharge the pelvic measurements were taken:

	Crests	25. cm.
	Spines	25. cm.
	Ext. conjugate . . .	17. cm.
Internal conj.	{ Diagonal	9.5 cm.
	{ True	7.5 cm.
	Right oblique . . .	18. cm.
	Left oblique(. . .	18. +cm.
	Tuberosities . . .	7. cm.

This woman and her husband were desirous of having children and promised to return to me if pregnancy occurred.

I next saw her October 9, 1909, when she called to see me at the hospital, stating she was pregnant. On examination I determined she was about seven months, pregnant. I explained then to her how she could have a living child through an abdominal incision. She had gained in weight, strength, and color, and was good in spirits. The next visit she was accompanied by her husband and all arrangements were made for her to enter the hospital the middle of December, as I estimated her time would be up about Christmas day.

She was admitted December 14 and ordered daily baths. No vaginal examination to be made. Abdominal palpation found the head down but not engaged. December 16, during the afternoon, patient complained of backache and at 8 P. M. it was noted slight pains at intervals of one-half hour had existed for three hours. At 9 o'clock, after thoroughly cleansing of vulva, I made a vaginal examination, using rubber gloves, and found the cervical canal would admit the finger. The patient was prepared for operation, Drs. O. T. Thomas and R. A. Bolt assisting.

The hospital Alumni Banquet was in progress and the physicians, about forty in number, were invited to the operation which took place in the amphitheater. Ergotol, half a dram, was given hypodermically as the anesthetic was started, which was ether by the drop method. An incision 5 inches in length was made from the umbilicus upward and the uterus exposed. Gauze packs were placed on both sides and above the uterus. A longitudinal incision was made in fundus of uterus while an assistant held the uterus firmly up against the abdominal wall by pressure from below. The placenta was immediately beneath the incision; the hand was quickly pushed through it, the feet were seized and the child quickly delivered, the cord being clamped in two places and severed and turned over to an assistant who took charge of it. The child cried lustily.

Placenta with membranes was quickly removed and a chromic catgut No. 2 suture was placed through the uterine wall at upper and lower angle of incision, tied, left long and held by an assistant while the intervening sutures, interrupted, were inserted and tied.

This prevented the uterus from receding from the abdominal incision. A continuous suture of catgut united closely the peritoneal surface of the uterus. The abdomen was closed with layer sutures, and the patient put to bed in good condition—pulse 72. The child was delivered in two minutes, the time of entire operation thirty minutes, and no more blood lost than at normal labor. The child weighed 5 1/2 pounds, was plump and strong, and able to nurse the following morning. The patient had a normal convalescence, sitting up the eighth day, and left the hospital January 13, 1910.

This patient suffered so little in comparison to her first confinement that she is determined to have more children, and it is possible I may be able to equal Dr. Davis's record of five Cæsarean operations upon one woman. The incision at the fundus, in my opinion, is less liable to give after-trouble than the lower incision.

536 ROSE BUILDING.

"APICAL PREGNANCY," A PREGNANCY IN THE HORN OF A NORMAL UTERUS.*

BY

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(With four illustrations.)

I DESIRE to call attention to a type of pregnancy occurring in normal uteri, which has not received the consideration it deserves and which is seldom diagnosed. The type to which I have reference is one where the fecundated ovum engrafts itself on the uterine mucosa in one or the other horn of a normal uterus. I say normal uterus advisedly, because this paper does not deal with pregnancies in abnormally developed uteri.

In the type of pregnancy to which attention is called, the uterus undergoes an unequal development. The observation has been made, that in a large number of cases, during the early weeks of normal pregnancies, a greater enlargement is found in one horn of the uterus than the other, but as the pregnancy advances this uterine asymmetry gradually disappears. Not so, however, in the type, of pregnancy under consideration; here the asymmetry of the uterus does not disappear.

Uterine asymmetry during the early weeks of pregnancy has received attention from several observers, and the literature on the subject is quite rich.

Dickinson(1) says in reference to asymmetry of the uterus during the early weeks of pregnancy "Where bulging was noted,

*Read before the New York Obstetrical Society, November 8, 1910.

in 40 per cent. the anterior surface only showed the change, in 25 per cent. the posterior only, in 25 per cent. both surfaces, and in 10 per cent. it was found laterally." One year later Dickinson (2) presented another paper on the subject and says "*Bellying* or *bulging* of the surface of the body of the uterus is the most constant and valuable sign. It is rarely absent. It may usually be found five and a half weeks after the beginning of the last menstruation or by the twenty-eighth day after coitus, although often present by the sixteenth or twenty-second day. Occurring most frequently on the anterior face, it may appear on both, while in retroversion it is found posteriorly, and in certain cases laterally."

McDonald(3) says "The asymmetrical enlargement of the uterus in the early weeks of pregnancy may almost become a distortion and may give rise to errors of diagnosis, the consequences of which are sometimes grave. On palpation it seems as if a tumor is annexed to the uterus and it has been on occasion diagnosed as tubal pregnancy."

In the type of pregnancy under consideration, the asymmetry of the pregnant organ remains and becomes more palpable as the pregnancy advances. Dr. Howard Kelly(4) gives a very accurate and interesting account of cases with this type of pregnancy. He says "This patient has suffered the most intense pain throughout her pregnancy. On opening her abdomen I found a large spherical reddish sac bulging out from the left cornu of the uterus, soft and fluctuating, and in one place above and in front there was an area of the sac 3 x 3 cm. in size so thin as to be almost transparent. The tubes and ovaries were normal. I closed the abdomen after passing a sound into the uterus and rupturing the membranes, and the ovum was discharged soon after by the vagina." "In six other cases I have been able to diagnose this condition, and in each case the sequel has proven the correctness of the diagnosis. In one instance, a physician brought his wife from Iowa for operation, with the diagnosis of extrauterine pregnancy. She had a cystic tumor in the left cornu uteri, representing a five months' pregnancy, while the rest of the uterus was firm and unchanged. Her suffering had been so great as to confine her almost constantly to bed. I gave my opinion that the pregnancy was intrauterine of this peculiar form and would terminate normally. It did so four months later." If my interpretation of these cases is correct, this condition affords an explanation of some of the cases reported

as extrauterine pregnancy becoming intrauterine with or without the assistance of electricity. On the other hand, the objection may be offered that these cases are in reality interstitial pregnancies with the ovum lodged very near the uterine cavity and becoming intrauterine with the increase in the size of the ovum, as interstitial pregnancies not infrequently do."

The above cited literature would indicate that pregnancy in the horn of a normal uterus is a distinct entity, and must have a symptomatology of its own. Our text-books do not speak of it, nor has the subject received much attention.

I beg herewith to report a case of pregnancy in the left horn of a normal uterus which has come under my observation. The case presented many interesting points and great difficulty was encountered in arriving at a correct diagnosis.

CASE.—Mrs. M., aged thirty-five, consulted me on February 10, 1907. She stated that she had missed two periods and considered herself pregnant, but that she was suffering great pain in the abdomen and was constantly nauseated. She was unable to be on her feet any length of time, feeling totally incapacitated. One week ago, quite unexpectedly, she had a flow of blood from the vagina which lasted for about twelve hours. Since then she has been spotting from time to time. For the past two days she has had several attacks of cramp-like pains and she now feared a miscarriage, having had one several years ago. She felt listless, had headaches, a feeling of general malaise, was nervous, sleepless and discouraged. Bimanual examination revealed an enlarged uterus exceedingly tender to touch. It was impossible to palpate the organ. She was ordered to bed to be kept under observation. The following day she had a uterine hemorrhage attended with considerable bearing-down pain and some rise of temperature, pulse normal.

She was advised to submit to a curettage, and on the next day, under chloroform narcosis, the following conditions were found: The uterus was irregularly enlarged and the left horn of the organ imparted a sensation like that of a fibroid tumor. A sound introduced into the uterine cavity showed a depth of only $3\frac{1}{2}$ inches. The cervix was thoroughly divulsed and the uterine cavity explored with finger, but found practically empty. A diagnosis of ectopic gestation complicated by a fibroid of the uterus was made and operation advised. She remained undecided regarding the operation for forty-eight hours when she had a sharp attack of uterine hemorrhage, attended with labor-like pains. Several hours later she expelled a small fetus by the vagina, but no membranes came away. She was then anesthetized and cervix thoroughly dilated. With the finger in the uterus, a large cavity at the left horn of the uterus was invaded, and with great difficulty a quantity of membranes removed and

the uterus packed. I realized then that I had to deal with a case of pregnancy in the left horn of the uterus. The patient did well for three days, when she had a chill and a sharp rise in temperature. A bimanual examination showed that the uterus had involuted to fairly normal dimensions, but something foreign was felt in its cavity. This proved to be retained secundines, the removal of which was followed by defervescence and an afebrile recovery.

The case here reported I believe to be a type of pregnancy that occurs very infrequently and that has not been accurately named and properly classified. I have prepared two charts,

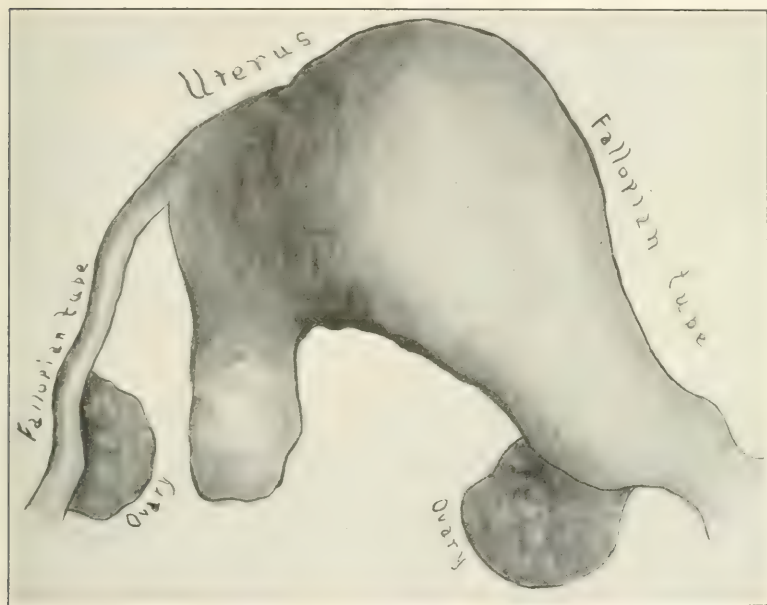


FIG. 1.—Tubo-uterine pregnancy.

one to illustrate this form of pregnancy and the other to show an interstitial or tubouterine pregnancy by contrast. The type of pregnancy under consideration is where the fecundated ovum becomes engrafted in the horn of a normal uterus. As the ovum enlarges the horn of the uterus undergoes a process of progressive distention, and to the examining hand, the large and bulging uterine horn may impart the sensation of a cystic mass or a fibroid tumor. Unless one is on his guard, an error in diagnosis is likely to occur.

In this type of pregnancy the fecundated ovum begins to de-

velop in the horn of the uterus and perhaps also in the extreme end of the Fallopian tube. As the pregnancy advances, the horn of the uterus becomes distended and should the growing ovum encroach on the Fallopian tube, the uterine end of the tube will share in the distention. The uterus undergoes an unequal enlargement. The horn grows at the expense of the body and thus the unequal expansion may lead to an erroneous diagnosis. Should the tissues of the horn become thinned as a result of the gestation, a rupture may occur and the condition be mistaken for a ruptured interstitial pregnancy. If the ovum

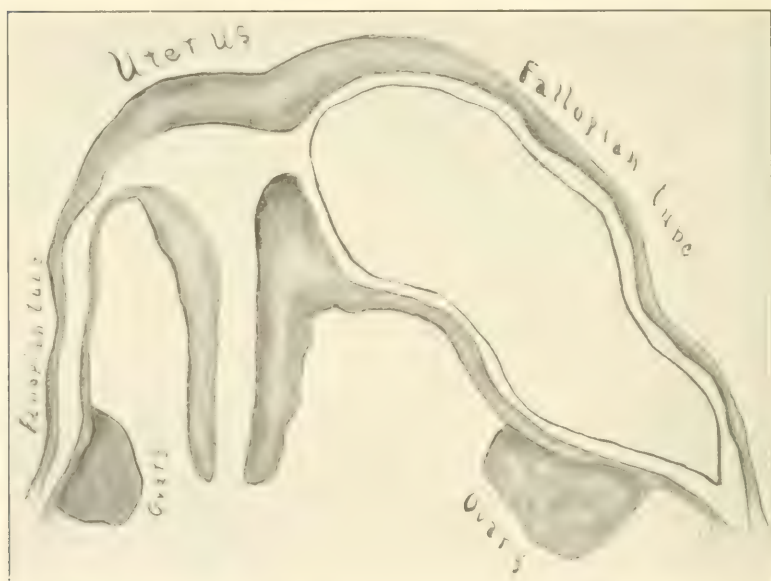


FIG. 2.—Tubo-uterine pregnancy.

grows in the direction of the cavity of the uterus, the pregnancy will become intrauterine and may terminate by a normal labor. That these cases do terminate in this physiologic manner is shown in the literature(5).

Many of these cases necessarily escape diagnosis and detection. It is only in those instances where the early months of pregnancy are marked by severe pain and an examination is made that the condition may be diagnosticated. Very many of these cases terminate in miscarriage and are never known. May not this type of pregnancy be an etiological factor in many otherwise unexplainable cases of miscarriage? May not an abnormally en-

grafted impregnated ovum send out nerve impulses that result in uterine contractions severe enough to expel its contents. An impregnated ovum normally situated and physiologically engrafted sends out nerve impulses that bring about the so-called "intermittent uterine contraction of pregnancy." These physiological impulses by becoming perhaps more frequent and more prolonged, may bring about conditions that become pathologic. A physiological function becoming an etiological factor for a pathologic entity is not an infrequent occurrence in the human economy.

A pregnancy in this situation of the generative tract may give rise to many objective as well as subjective symptoms. It is not unlikely that in this type of pregnancy menstruation may continue during the early months. This type of pregnancy may also explain those antepartum hemorrhages that are so mystifying and defy the best diagnostic acumen. In some of these cases of metrorrhagia, no positive diagnosis can be formulated. All that we know is that there occurs a slight bloody flow from the vagina which may last a few hours to as many days. With or without treatment the bleeding ceases and the case goes on to a normal labor. The mysterious metrorrhagia which has worried the patient and the practitioner is never explained. In these cases none of the conditions exist that usually cause an antepartum hemorrhage—such as endocervicitis, ulceration of the cervix, polypoid conditions, carcinoma, ulceration or hemorrhoidal conditions of the vagina.—nor evidence of separation of a normally placed placenta. These cases bleed, have slight or no pain; a miscarriage is suspected, but does not happen. Who can say but that a pregnancy in the horn of the uterus is responsible for all these symptoms?

May not this type of pregnancy be responsible for the so-called cases of menstruation in the early months of pregnancy. Edgar says(6) "Exceptions to the rule of suspended menstruation in pregnancy occur now and then during the early months and are explained by the fact that the uterine cavity is not obliterated by the junction of the decidua reflexa and the mucous membrane of the uterus or decidua vera till the close of the fifth month. In case the menses continue throughout pregnancy (a very rare condition indeed) there is probably an abnormal and incomplete fusion of the deciduæ."

Playfair says(7) "Menstruation may go on for one or more periods during conception or even the whole pregnancy. The

latter occurrence is extremely rare, the former is much less uncommon and instances of it have probably come under the observation of most practitioners. The explanation is now well understood. During the early weeks of gestation, when the ovum is not yet sufficiently advanced in growth to fill the whole uterine cavity, there is a considerable space between the decidua reflexa which surrounds it and the decidua vera lining the uterine cavity. It is from this free surface of the decidua vera that the periodic discharge comes, and there is not only surface for it to come from, but a free channel for its escape through the os uteri."

It is not intended to disprove the above-mentioned long established theories, because if the uterine cavity is completely obliterated of course no menstruation can occur, but this theory falls short in explaining certain facts in this phenomenon. If it is true that menstruation in the presence of conception is due to an incomplete obliteration of the uterine cavity, then the phenomenon of menstruation in the early months of pregnancy ought to be a more common occurrence, because in all those cases where impregnation occurs immediately before the menstrual epoch, the menstrual flow ought not to cease, as in these cases the uterine cavity could not be obliterated, a true decidua could scarcely come into existence so soon. But as a matter of fact menstruation during pregnancy is a rare occurrence instead of being a common one. It is therefore insufficient to explain this phenomenon on the basis of a local manifestation. It is of deeper significance. That the phenomenon is not of a local manifestation is furnished by the fact that in ectopic gestation menstruation is suspended in the presence of conception, although no decidua reflexa nor vera exist to obliterate the uterine cavity by their union. In ectopic gestation, the suspension of the menses for at least one period is the rule rather than the exception, and in many cases the suspension extends over several periods. Then, again, amenorrhea is caused by many other conditions than that of pregnancy, and it is known that the menstrual suspensions are not local manifestations, but due to an unbalanced central nervous influence.

It is essential to give the phenomenon of menstruation during the early months of pregnancy a wider meaning. The phenomenon of normal menstruation itself is only explainable on a physiologic basis. Menstruation is not a local phenomenon, but a local manifestation of a physiologic vital force. The most satisfactory theory of menstruation is doubtless the one that holds that it is

under the control of a central nervous system reflected by way of the sympathetic nerves to the ovaries, Fallopian tubes and uterus and that some chemical substance elaborated by that organ is thrown into the circulation.

In Foster's physiology the subject of menstruation is summed up as follows: "It is obvious that in these phenomena of menstruation we have to deal with complicated reflex actions, effecting not only the vascular supply, but apparently in a direct manner the nutritive changes of the organs concerned. Our studies on the nervous action of secretions render it easy for us to conceive in a general way how the several ends are brought about. It is no more difficult to suppose that the stimulus of the enlargement of a Graafian follicle causes nutritive as well as vascular changes in the uterine mucous membrane than it is to suppose that the stimulus of food in the alimentary canal causes those nutritive changes in the salivary glands or pancreas which constitute secretion. In the latter case, we can to some extent trace out the chain of events, in the former case we hardly know more than the maintenance of the lumbar cord is sufficient, as far as the central nervous system is concerned, for the carrying on of the work."

When conception occurs, whether the impregnated ovum is situated normally or abnormally, whether immediately before or remotely from the next menstrual period, a nervous impulse is sent out to inhibit menstruation and no further sanguineous discharges occur until after labor and lactation. This inhibition, however, may be unbalanced by abnormal impulses and pathologic changes such as exist in ectopic gestation or abnormalities in the ovum, its membrane or fetus, as well as abnormalities in the decidua. While a local nervous mechanism in the generative organs during menstruation cannot be denied, a central nervous influence must be acceded for this phenomena.

In pregnancy such as is under consideration, a train of abnormal nervous impulses are set in motion and symptoms such as pain, irregular sanguineous discharges, and so on follow. These symptoms are the result of unbalanced nerve equilibrium and pathologic changes in the growing ovum and decidua.

Given a case of pregnancy that presents symptoms objective and subjective, that cannot be classed with normal gestations or types of ectopic pregnancy, it behooves one to consider if the case be not pregnancy in the horn of the uterus. Refinement in diagnosis is that to which every conscientious worker aspires.

If the possibility of dealing with the type of pregnancy here considered is kept in mind, an error in the diagnosis of this condition is not likely to occur. The history of pregnancy, the irregular flows, the pain and discomfort these cases experience, as well as the irregular contour of the uterus on examination, will place one on his guard in properly diagnosing the true condition present.

Under some circumstances doubtless the differential diagnosis between a pregnancy in the horn of the uterus and ectopic gestation, especially if the latter is of the interstitial form, would be attended with considerable difficulty. This difficulty, however, is not unsurmountable; an examination under an anesthetic will very likely clear up some of the doubtful features and will allow a more convincing and through palpation of the intraperitoneal organs. Many of these cases of pregnancy in the horn terminate in miscarriage, and if symptoms of threatening abortion are present, an exploration of the interior of the uterus with the finger will help to clear the diagnosis.

To thoroughly explore a uterus whose horn harbors the product of gestation is no easy matter, because the distended horn of such an organ is not easily reached. It requires the introduction of the entire hand into the vagina, a very thorough divulsion of the cervix, and the introduction of one or two fingers into the uterus for a proper exploration, and only a thorough exploration will be sufficiently convincing that the uterus is gravid or empty. An instrumental exploration alone will fail to accomplish anything and even the introduction of one finger may not meet with more success. In this type of pregnancy the divulsion of the cervix and the attempt of exploration will materially assist and become instrumental in the expulsion of the fetus. I am fully convinced that in instances where practitioners failed to empty the gravid uterus of its contents and after some hours the fetus and secundi came away spontaneously, are many times cases of pregnancy in the horn of the uterus. In the course of my practice I have heard of three specific instances where the uterus was explored and cureted and a few hours later the woman passed the fetus and part or all of the placenta. Recently a case was related to me where the operator called to do an emergency curettage supposedly postabortum. He divulsed the cervix, cureted the uterus and, not having the proper instruments at hand, he used a Sims' solid-blade vaginal depressor as a curet, went over the surface several times carefully. He

found no fetus. Several hours later labor pains set in and a small fetus came away. I have no doubt that in this case the fetus was tucked away in the horn of the uterus and the case was one of the type of pregnancy here considered. Failures of this kind in not finding the fetus are not recorded, but I am convinced that they occur quite frequently.

In cases where the horn of the uterus as a result of the progressive distention by the growing ovum, becomes thinned out, there is danger of a rupture. Should a rupture take place, the case would be diagnosed as a ruptured tubal pregnancy. Even if the case undergoes laparotomy, it is questionable if the diagnosis would be cleared up, because the gross appearance of a ruptured pregnancy in the horn and an interstitial pregnancy would be very much alike. The two charts appended illustrate the similarity of these two conditions in the gross. The two charts also illustrate that the palpating hand in making a bimanual examination will experience the same sensation in both of these conditions, and only a thorough exploring of the interior of the uterus will differentiate the two conditions.

Normally, the thickness of the uterine wall is about $5/6$ inch. The Fallopian tube traverses the wall to that extent. Should an impregnated ovum engraft itself in the tube near the uterine end, the case will become a pregnancy in the horn of the uterus. If the ovum, however, lodges near the entrance of the tube into the uterine wall, the resistance the tissues of the tube will offer the growing ovum will be far less than the hard uterine tissues; the growth of the ovum will therefore be in the direction of the tube, and a true interstitial pregnancy will result. A true interstitial gestation will never become intrauterine pregnancy; the hard comparatively unyielding uterine tissues will act as a bar.

In looking up the literature relative to this subject, I came across the report of many cases with a diagnosis of ectopic gestation, the patients subsequently delivering themselves of the product of conception by the vagina. I believe many of these cases were pregnancies in the horn of a normal uterus. I will read briefly the report of a case from the transactions of the Philadelphia Obstetrical Society of December 5, 1878, by Dr. John Graham. This report is selected because the case was observed by three men of reputation and to my mind the case was clearly a pregnancy in the horn of the uterus. The case is reported under the following heading:

(9) "*Two cases of tubal pregnancy terminating favorably at the fourth month by spontaneous delivery through the uterus.*"

Mrs. C., aged twenty-seven, missed her period on August 1, 1878. She had nausea, vomiting, uncomfortable feeling in her pelvis and believed herself pregnant. On November 8 she consulted the author and said that she was seized with abdominal pains on October 1, and noticed since that day a show of blood daily. On examination through the abdominal walls I found what appeared to be the outline of the uterus, reaching up a short distance above the symphysis and lying somewhat to the left of the median line. To the right of the uterus I could feel an irregular doughy mass, reaching outward toward the pelvic brim, its upper border not being so high as that of the uterus. It was tender to the touch. I could detect no fluctuation. I listened but could not discover the beat of a fetal heart. On vaginal examination, I found the os soft and slightly enlarged, and to its right the same irregular mass felt through the abdominal walls projecting down against the roof of the vagina and encroaching somewhat upon its cavity. The case was seen by two consultants. The diagnosis of tubal pregnancy was agreed to and operation decided upon for the following day. The physicians left the patient at 2 P.M.; at 8 P.M., or six hours later, the patient began to have severe labor pains and at 12 midnight, she delivered herself of a four-month fetus. The fetus was dead, but from appearance had not been so long. On introducing my finger, I found the vagina intact and easily removed the placenta which was projecting from the uterine os. *Patient had lost but little blood; the uterus was firmly contracted and the enlargement to its right had almost entirely disappeared.* I made a digital examination the next morning and found nothing abnormal excepting very slight increase in bulk of what appeared the right broad ligament. Patient at this time was comfortable and was almost as well as after an ordinary case of miscarriage."

The only comment that I have to make on this case is that it was clearly a case of pregnancy in the right horn of a normal uterus.

(10) On January 6, 1885, Dr. Janvrin reported a case before the New York Obstetrical Society which I believe was a pregnancy in the left horn of the uterus.

Dr. Janvrin says: "On August 17 last patient was exposed to pregnancy. On September 15 she had a slight flow lasting two days. On the twenty-first she flowed for one day. On the twenty-seventh, again for two days. On October 3, Dr. Janvrin found the left horn of the uterus enlarged. He observed the case daily until October 14, when there was a marked flow of blood from the uterus. All symptoms of pregnancy were present. On October 28, he felt convinced that the pregnancy was in the left Fallopian tube. He felt also convinced that the mass projected into the uterine cavity. He made attempts

by pressure to force the fetus entirely into the uterine cavity. Dr. T. G. Thomas saw the case in consultation and expressed the opinion that there was no tubal gestation present, that the fetus was entirely within the uterine cavity, *situated pretty well up in the left horn of the uterus*. Dr. Janvrin watched the case for six weeks and found that the right horn of the uterus began to enlarge and the prominence of the left horn to diminish. On December 15, four months after conception, fetus and membranes were expelled. Normal recovery followed."

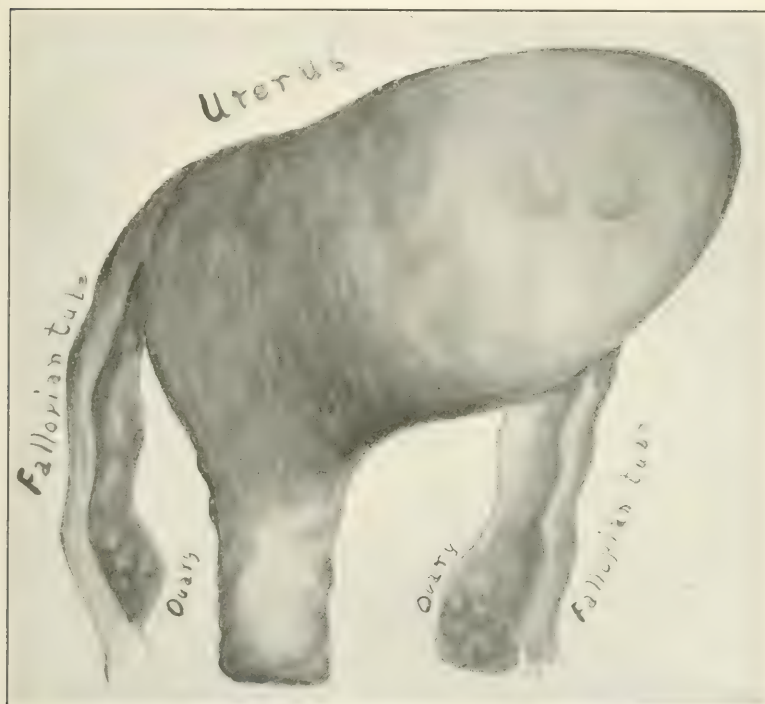


FIG. 3.—Apical pregnancy.

I believe that this was a case of pregnancy in the left horn of of the uterus.

In looking about for a proper name for this form of pregnancy, it occurred to me that the word "*apex*" would adequately express it. I believe, therefore, that the term "*apical pregnancy*" would clearly define this type of gestation. The word "*apical*" is derived from the Latin word "*apex*," genitive, "*apicis*," which has reference to the tip, top, or vertex of a cone or triangle. The uterine cavity is triangular, the apices being the inner openings

of the Fallopian tubes and the internal os of the cervix. Should a fecundated ovum engraft itself in one horn of the uterus it may be said that it is lodging in the tip of a cone or triangle, hence the term "apical pregnancy."

If we adopt the term of "apical pregnancy" to describe a form of gestation when the ovum engrafts itself in the horn of a normal uterus, we shall have the following classification, which



FIG. 4.—Apical pregnancy.

would include every form of pregnancy occurring in the human species.

1. Normal Pregnancy.—In the uterine cavity.
2. Ectopic Pregnancy.—Outside of the uterus.
3. Corneal Pregnancy.—In abnormally developed uteri.
4. Apical Pregnancy.—In the horn of a normal uterus.

The case reported in this paper, and the opinion expressed here is with the object in view of calling attention to the fact that, given a case of pregnancy presenting abnormal and unusual

symptoms, in making a diagnosis of the case, one should bear in mind not only the possibility of an ectopic gestation and pathologic states of an intrauterine pregnancy and pregnancies in abnormal uteri, but also a class of pregnancies occurring in the horn of a normal uterus, for which I would suggest the term of "apical pregnancy."

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FIBROMYOMATA OF THE UTERUS, COMPLICATING PREGNANCY, LABOR, AND THE PUERPERIUM.*

A STUDY BASED UPON 100 CASES AT THE NEW YORK LYING-IN HOSPITAL.

BY

RALPH WALDO LOBENSTINE, M. D.

(With five illustrations.)

IN order, to approach this subject in a systematic manner, I will ask you to consider it under the following headings:

- A. Physiological changes in myomata during pregnancy, labor and the puerperium.
- B. Pathological changes.
- C. Course and symptoms.
- D. Statistics of our series.
- E. Synopsis of illustrative cases.
- F. General management.

A. PHYSIOLOGICAL CHANGES.

It will, I think, be not amiss to recall to your minds, the essential changes that take place in tumors of this class, during

* Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910, and at the Meeting of the Alumni of the Sloane Maternity Hospital, October, 28, 1910.

the parturient state. These changes are in some instances very slight, while in others they are so marked that the picture assumes an entirely different aspect. The tumor, in the typical instance, undergoes hypertrophy as well as hyperplasia of all its elements; added to this, there is a more or less marked edema. This edema is doubtless dependent upon the vascular changes in the tumor, incident to the pregnancy; it may depend upon tension of the capsule; direct pressure upon the growth; or, again, it may be due to the torsion of the pedicle, in a pedunculated tumor. This change in size, due to edema, is at times so marked that even the simple, practically harmless, small sessile fundal growths may gradually attain such size, that they become apparent to the naked eye on the mere inspection of the abdomen; or, an originally small interstitial tumor in the lower zone may finally, by this process of growth, fill the entire pelvis. Coincident with this increase in size, we find a change in the shape of the tumor. The usual round conformation gives way to the oval or the irregular. One of the most noticeable features is seen in the "relative change in position" of certain of these tumors, toward the latter part of pregnancy and during the early hours of labor. This is most pronounced in the case of myomata in the cervix or lower uterine segment. It is partly due to the expansion from edema; partly to the increasing size of the uterus; and in part (the most pronounced cause) due to the drawing-up of the cervical tissue into the lower uterine zone, in nature's preparation for delivery.

After the completion of labor, retrograde changes soon set in. The involution may or may not keep pace with the involution of the uterus. These retrograde steps start in, at times, with amazing rapidity; at other times, the process is a slow one. Under such abnormal conditions the uterus tends to involute more slowly, thus often delaying the involution of the growths themselves. In the typical case, as involution progresses, the tumor becomes more dense, more spherical, and resumes more or less its original position. Occasionally after three to eight weeks, the smaller tumors disappear entirely. Repeated pregnancies have the tendency to alter considerably the natural course of the changes we have just described.

B. PATHOLOGICAL CHANGES.

These few remarks lead us in the next place to consider briefly the abnormal changes which may arise in the course of the

childbearing process. Such changes are dependent, in the main, upon *a.* nutritional changes, including torsion of a pedicle; *b.* infection.

a. The *primary nutritional disturbances* will depend chiefly upon poor vascularization of the tumor, due either to a sclerosis of its vessels or a thrombosis or to the natural stasis, in both circulatory and lymphatic systems, in the early days of the puerperium. The *secondary nutritional changes* are due chiefly to torsion of the pedicle of a pedunculated tumor or to marked pressure upon the tumor when the latter is incarcerated in the pelvis. With these faulty nutritional changes present, hyaline and fatty degenerations readily set in. With now the element of infection introduced, we can easily appreciate how such a growth may become necrotic, gangrenous, or even may suppurate. The most common organisms found in such cases, are the streptococcus, the staphylococcus, the colon bacillus, and the gonococcus.

Gangrene may at times set in before labor, but it is found most frequently in the early puerperium. This is quite natural, surely, as it is during the early days of the puerperium that we find the most fruitful soil for bacterial action—soil the resistance of which has been decreased by the sudden change in blood-pressure, by the alteration in the position of the tumor, and by mechanical irritation, more or less severe, during labor. Infection, with resultant gangrene and suppuration, is seen most commonly in the large submucous growths, while least frequently in the sessile subserous variety. Gangrene may start either beneath the capsule of the myoma or near the center thereof. The latter is seen, I believe, more often in the pedunculated tumors, while in the submucous growths, the changes have the tendency to advance from the periphery toward the center. Finally, I would point out the fact that the gangrene may have its origin in a small hemorrhagic area, either central or peripheral, due to either extreme torsion of a pedicle or to the force of the uterine contractions during labor.

C. SYMPTOMS AND COURSE DURING PREGNANCY.

In the consideration of this subject, we find that pregnancy does not take place so readily in a myomatous uterus. This is due in part to mechanical reasons; in part, to an accompanying endometritis. From 25 to 30 per cent. of women with fibroids are sterile. Goetze, from his experience at the Greifswald

clinic, has recently shown that 13.6 per cent. of the women with small myomata were sterile; 17.4 per cent. of those with tumors the size of a child's head; and 50 per cent. of those with tumors larger even than this. Submucous growths interfere the most seriously with pregnancy. A further etiological cause of the relative sterility resides in the pathological condition of tubes and ovaries. If pregnancy occurs, the tendency to abort is greater than in uncomplicated cases. The early interruption of pregnancy, whether this interruption be spontaneous or artificial, may have very serious consequences; owing to the great tendency to severe hemorrhage in the bad cases, as well as to the mechanical difficulty, often present, in rapidly emptying such a uterus.

In those cases that proceed with the pregnancy, the chief symptoms are, excessive vomiting, more or less abdominal pain, pain along the sciatic nerves, tenderness, occasionally marked abdominal symptoms, due either to a twisted pedicle or to an incarceration; an increased tendency to placenta previa, accidental hemorrhage, premature labor. To these symptoms we must add the possible complications from tubes or ovaries. The element of pain and discomfort is very variable and depends upon the size, location, rapidity of growth, and number of the tumors. In some instances the symptoms are really severe and appear early. They undoubtedly at times cause so great distress that operative interference must be resorted to, *but in the vast majority of cases (and I wish to accentuate this statement), the symptoms are not pronounced and may be practically absent.*

Course During Labor.—The chief dangers during labor are from hemorrhage, adherent placenta, prolapsed cord, malpresentations, and from dystocia due to obstruction by the growths. As a result of the dystocia and malpresentations, together with weakened uterine musculature, rupture of the uterus is more likely to occur. Despite these dangers, we are forced to conclude from our study that labor progresses fairly normally in the majority of cases, although at times, of course, it may prove fatal.

During the puerperium, there is usually more pain than in the uncomplicated cases; the lochia is somewhat more profuse. The greatest danger lies in the degeneration and infection of the tumor or tumors, with or without a general septic process. When these become gangrenous or actually suppurate, there is

increased pain and tenderness, more or less severe temperature and rise in pulse; there may be chills; there is a marked leucocytosis. There may or may not be a foul vaginal discharge; the abdomen becomes distended and tender, vomiting may occur.

In the early days of the disturbance it is often difficult to say whether active changes are going on in the tumor or whether there is not *merely* a moderate noncomplicated infection of the uterus. The submucous growths may be cast off in sections or spontaneously *in toto*. In the effort of the uterus to expel a fibroid, severe hemorrhage can occur. It is possible for a subperitoneal or interstitial suppurating myoma to rupture into the peritoneal cavity. Fortunately, this picture is not common. The puerperium progresses, in the case of most patients, *quite smoothly and with but little trouble*.

D. STATISTICS OF THIS SERIES.

Average age twenty-eight and one-half years; primiparæ, 43 per cent.; multiparæ, 57 per cent.

Type of myoma: 25 per cent. pedunculated, 21 per cent. submucous, 45 per cent. interstitial, 9 per cent. subserous sessile.

Size as large or larger than child's head at birth, 44 per cent.; smaller than this, 56 per cent.

Number of tumors: single in 63 per cent.; multiple in 37 per cent.

Location of tumor: 33 per cent. in lower zone of cervix, 67 per cent. in fundal region, 59 per cent. anterior wall, 41 per cent. posterior wall.

Number of abortions: spontaneous, 13; after operation, 2.

Presentation before any interference: vertex, sixty-five cases; breech, six cases; transverse, fourteen cases.

Hemorrhage at delivery: severe fourteen times; moderate eighty-six times.

Uterine tamponage in eleven cases.

Adherent placenta in four cases.

Fibroids becoming gangrenous six times.

Marked febrile reaction in puerperium, nine cases.

Fetal mortality at or near term (child dead on admission) six cases.

Maternal mortality, four cases.

Cause of death. ¹(One) Intestinal obstruction in puerperium.

¹(One) Shock and sepsis. ¹(One) Sepsis (Gangrenous myoma).

¹(One) Shock and sepsis.

Method of Delivery.—In this list of eighty-five cases of fibroids complicating pregnancy delivered at or near term, *operative delivery* was employed in the following, viz:

Version in three cases. High forceps in two cases. Median forceps in three cases. Low forceps in seven cases. Cesarean section alone in four cases. Cesarean section with hysterectomy in two cases.

This list shows the necessity of abdominal operative interference in but six cases, *i.e.*, in a little over 7 per cent. of the cases. The more common obstetric operations, most of which were not difficult, were performed on fifteen cases, *i.e.*, 17.6 per cent.

Myomectomy during pregnancy was performed in this series but twice. One case went to term while the other aborted the day after operation.

Operations in the first four weeks postpartum.

Two complete hysterectomies (abdominal) for sloughing myoma.

One supravaginal hysterectomy for sloughing myoma.

Three vaginal myomectomies for sloughing myoma.

One vaginal myomectomy for submucous myoma, causing hemorrhage.

One abdominal myomectomy for subserous fundal myoma with severe pain.

All the other cases were advised to postpone operation until a later date.

E. CASES ILLUSTRATING THE VARIOUS PHASES OF THIS SUBJECT.

Case of incomplete abortion demanding serious operative interference.

C. N. 16940. Mrs. I. S., age thirty-three; I-para; admitted to the Lying-in Hospital January 7, 1910, on account of hemorrhage, supposedly due to a threatened abortion at the fifth month. Patient had been bleeding on and off for a month. On admission patient was found to have a uterus the size of a five-months' pregnancy, but it was found to be irregular in outline and consistency. The cervix was long and hardened and but one finger dilated. The patient was bleeding very considerably. A diagnosis was made of fibroid uterus and probable early abortion. Hysterectomy was deemed the best course to pursue, but owing to serious objections on the part of the patient, it was decided to attempt a thorough emptying of the uterine cavity from below. In order to reach the uterine cavity proper, an anterior incision

¹Simple Cesarean sections with patients apparently already infected.

had to be made in the cervix, the cavity was then emptied of an incomplete three months' abortion. The uterus was tightly tamponed and the cervical incision sutured. The uterus was found to contain two large fibroids; one on the posterior wall, low down, the size of an infant's head, and the smaller one the size of a goose egg, on the lateral wall anterior. On January 12, the patient having consented to a hysterectomy, and as there was some slight temperature and more lochia than normal, a hysterectomy was performed. Recovery was uneventful.

Illustrating some of the dangers of myomectomy during pregnancy.

C. N. 17321. Mrs. V. S., age thirty-two; I-para. Patient admitted to the hospital five months pregnant, complaining of severe pain to the right of the uterus and of a bloody vaginal discharge, which had been continuing for from four to five months. Examination showed a five months' pregnant uterus; cervix soft and slightly patulous; tumor, the size of a grape-fruit, was palpated in the right broad ligament, attached to the right wall of the uterus. A myomectomy was performed with considerable difficulty and considerable hemorrhage. Patient stood the operation well, but aborted the following day and had a stormy convalescence.

C. N. 7274. Mrs. A. M.; age thirty-four; I-para. Had a myomectomy performed for large subserous fibroid at third month. Pregnancy progressed satisfactorily and had spontaneous delivery at term. On discharge of the patient at the end of the puerperium, it was found that the uterine body still contained several fair sized tumors.

This case illustrates well one of the reasons for not doing a myomectomy during pregnancy, inasmuch as it is possible to overlook some of the growths, or after opening the abdomen it will be found impossible or unwise to remove them all.

Cases illustrating large fibroid without symptoms.

CASE I.—C. N. 6248. Mrs. J. Z., age thirty-four; IX-para; was delivered at full term. Normal labor. Moderate bleeding during third stage. An examination of the patient before labor revealed a large fibroid near the right horn of the uterus, about the size of a fetal head. Sixteen days postpartum examination showed that the tumor had not decreased in size, lying just back of the symphysis. Convalescence was uneventful.

CASE II.—C. N. 6245. Mrs. B. K., age twenty; I-para. Patient delivered normally at full term. Considerable post partum hemorrhage. Convalescence normal, and it was not until on the fourteenth day, when the discharge examination was made that it was discovered that there existed a subserous fibroid, the size of a fetal head and attached entirely to the fundus. Operation postponed until a later date.

CASE III.—G. H. No. 1764. Mrs. T. A., age twenty-three; I-para; was admitted April 29, 1907, about four and one-half months pregnant, for albuminuria. The albuminuria was only moderate in degree. The patient had a large pedunculated

fibroid, the size of a grapefruit, attached to the posterior surface of the fundus. She had no symptoms therefrom and refused to stay but eleven days in the hospital. Her further progress was uneventful.

CASE IV.—C. N. 12820. Mrs. M. P., age twenty-six; I-para; delivered normally at ninth month, June, 1908. Labor nine and one-half hours, short second stage. Presentation vertex, R. O. P. Examination showed a large pedunculated myoma attached to the fundus by a thick pedicle. This caused no trouble from dystocia. There was, however, considerable hemorrhage during and just after the third stage, so that the uterus had to be tamponed. Convalescence was uneventful. The tumor was not removed at this time, as it seemed unwise, with no symptoms present, to do so until a later date.

CASE V.—C. N.—Mrs. L. L., age forty; I-Para. Had normal pregnancy despite several fibroids of the fundus. One of these tumors situated near the right horn on the anterior wall was the size of an orange. Many men would have been tempted to do a myomectomy on this case during pregnancy. The patient, however, went through pregnancy, labor, and the puerperium with absolutely no disturbance.

Nature's method of drawing up a myoma out of the pelvis during labor.

CASE I.—C. N. 12236. Mrs. I. M., age thirty; III-para. During this pregnancy she was observed from the third month to term. When first seen there was found to be a fibroid the size of a goose egg to the right and behind the cervix in the brim of the pelvis. This tumor increased rapidly in size during pregnancy. At the seventh month it had reached the size of a child's head. At the time of labor it was filling the brim of the pelvis. Patient had had but few symptoms during pregnancy. After four hours of labor, the tumor could not be felt per vaginam, but could be felt abdominally and to the right. There was a normal breech delivery of a living child. The patient insisted on going home on the tenth day after a normal puerperium. Three months after delivery the patient still refused to have the tumor removed. At this time it was again located in the pelvis and had decreased in size to that of an orange.

CASE II.—C. N. 11082. E. B., age twenty-eight; III-para. Patient was admitted in labor at term. She was found to have a large fibroid the size of a child's head at the brim of the pelvis. As there seemed to be a tendency for the cervix to dilate normally and for the tumor gradually to assume a higher position, a waiting policy was pursued. After a delay of about eight hours, the tumor had been drawn up entirely out of the way and labor completed normally. The puerperium progressed satisfactorily.

CASE III.—C. N. 14795. Mrs. J. C., age twenty-three; I-para, at term; was delivered at the hospital normally in 1908. When three months along, a myoma the size of an orange was found in the pelvic brim. At the time of labor this tumor had enlarged

to the size of a child's head, and was still in the brim. During labor it was drawn up entirely out of the way by nature. It was an interstitial growth in the lower zone, posteriorly. Little bleeding during labor. Convalescence easy. On discharge, the tumor was again down in the pelvis. Operation postponed until later.

Cases illustrating large fibroid without symptoms during pregnancy; also possibility of delivery by forceps or version.

CASE I.—C. N. 14371. Mrs. A. S., age forty; VI-para; at term. Had long, tedious labor. Transverse presentation and large fibroid occupying anterior wall of lower uterine zone. The tumor was entirely below the presenting part and was a large submucous one, fairly movable. The operator decided to try delivery by version. This was successful, the child weighing six and a half pounds and alive. Although there was considerable pain and tenderness in the puerperium, convalescence was satisfactory and operation delayed until a later date, inasmuch as there seemed to be no pathological changes in the tumor.

CASE II.—C. N. 15715. Mrs. A. A., age thirty-nine; I-para. Delivered July 7, 1909; moderate hemorrhage and placenta expressed easily. Moderately contracted pelvis. There was a large subserous fibroid, size of a grapefruit attached to the anterior wall in the body of the uterus proper. Patient was delivered with high forceps without great difficulty. Puerperium was quite smooth. Had no symptoms from fibroid in the puerperium, and was discharged on the thirty-fifth day, refusing operation, with a fibroid the size of an orange.

Cases illustrating true dystocia, requiring Cesarean section.

CASE I.—C. N. 4591. Mrs. R. B., II-para, was admitted to the hospital at term. Examination showed a flattened pelvis and two large fibroids the size of grapefruit, one in the pelvis, the other at the fundus. There was a transverse presentation. A Cesarean section was done and a supracervical hysterectomy. Patient went home on the nineteenth day in excellent condition. The tumor was interstitial.

CASE II.—C. N. 17808. Mrs. E. M. was admitted to the hospital June 8, 1910. She was a I-para and had been in labor for twenty-four hours before admission. The membranes had been ruptured for about twelve hours. On examination the uterus was found to be tonic; there was a very large interstitial myoma blocking the pelvis almost completely, so that the cervix, which was dilated to 6 cm., was forced high up over the right "linea terminalis." The fetus was dead and was presenting by the breech. There was also another large pedunculated myoma, attached to the fundus, and floating freely in the peritoneal cavity. As the child was dead and as the labor had been so prolonged, we should have preferred to do a craniotomy with breech extraction, but concluded that this could not be done with the conditions present. A Cesarean section was at once performed and the uterus removed. The cervix was left *in situ*

after the thorough disinfection of the canal. The patient made a good recovery, although there was a moderate temperature curve for several days. She left the hospital on the seventeenth day. Had we attempted to deliver through the natural passages we would doubtless either have failed, or else have caused serious trauma to the uterus and myoma.

Cases of suppurating myoma in the puerperium.

CASE I.—C. N. 10160. Mrs. R. M., age forty-five; I-para. Delivered by midwife and doctor outside. Physician had



FIG. 1.—Large interstitial myoma of cervix and lower zone, causing true dystocia and requiring Cesarean section.

delivered a dead baby with forceps with difficulty. Patient then went into collapse and was sent into hospital. There was found to be an extensive tear in the left broad ligament and a large interstitial fibroid in the anterior wall of the uterus adjacent to the tear. There was no fresh bleeding on admission. Patient was simply kept quiet with an ice pack over the uterus after her recovery from shock. Temperature for the first two and one-half weeks ranged between 98° and 100.4°. On July 12, as the lochia was very foul and as the fibroid was evidently becoming gangrenous, an easy myomectomy was performed from below. The tear into the broad ligament was healing fairly

well. After the operation the patient had an up-and-down temperature running between 98.6° and 102° for the first few days, then gradually coming down to normal. Patient left against advice on July 26, fourteen days after operation in fairly good condition. The patient had a myocarditis, which evidently had been the cause of her collapse during labor.

CASE II.—C. N. 9728. Mrs. P. S., age twenty-four; I-para. Delivered by midwife three days before admission to hospital. Labor had been normal. After delivery, both the midwife and the patient herself noticed a large uterine growth, which had not



FIG. 2.—Large interstitial myoma, the size of a child's head, causing true dystocia, requiring Cesarean section.

been observed before. On entering the hospital, the uterus was found to be of fair size and an interstitial fibroid mapped out, the size of an adult's head on posterior wall of the uterus. Lochia was moderate but had a foul odor. There was moderate tenderness over the tumor. Patient ran a temperature between 101° and 102° for thirteen days. The tumor remained the same size as on admission. Finally, on the fourteenth day, as there was no perceptible improvement, a laparotomy was performed. A panhysterectomy was performed, but even at the time of operation we decided that the infection had already invaded the lymphatics. Although the operation was done easily and with due care to the risk of infection, the patient died on the fourth day after operation. The myoma was found to be gangrenous

with numerous suppurating foci. This case might have been saved if it had been operated on earlier.

CASE III.—C. N. 14522. Mrs. K. S., age twenty-two, I-para, was admitted at full term to the hospital in labor. Normal delivery. Rather profuse postpartum hemorrhage. The after-pains during the first few days were severe and the lochia profuse. On the seventh day, patient developed a temperature of 101°. On the eighth day, with the temperature still up, the uterus was explored and a submucous fibroid found at the anterior wall,



FIG. 3.—Pedunculated myoma, size of child's head, with large interstitial myoma of posterior lower zone, requiring Cesarean section.

practically filling the entire uterine cavity. There was a foul lochia; for sixteen days the patient ran a temperature of between 100° and 104°. On the seventeenth day, permission was given for operation and a supracervical hysterectomy was performed. For the first week after operation temperature ranged between 99° and 102°; pulse around 100; the leukocytes went up as high as 21,000 and the polymorphonuclear count 91 per cent. Then the temperature began to come to normal and the patient was discharged in good condition thirty-six days after operation.

N. B.—During the days immediately preceding the operation, the uterus had become much more tender and discharge more foul. The lower edge of the fibroid could be seen by exposing the cervix and it was plainly evident that it was sloughing rapidly.

CASE IV.—G. H. No. 310. Mrs. C. L., age fifty-two; XIV-para; admitted to hospital with incomplete abortion and with a history of having passed apparently a small sloughing fibroid. On admission, the uterus was explored; the lochia was foul and the uterus was found to be the seat of a number of small interstitial and submucous growths. In all, four sloughing submucous fibroids, about the size of a large egg, were removed from

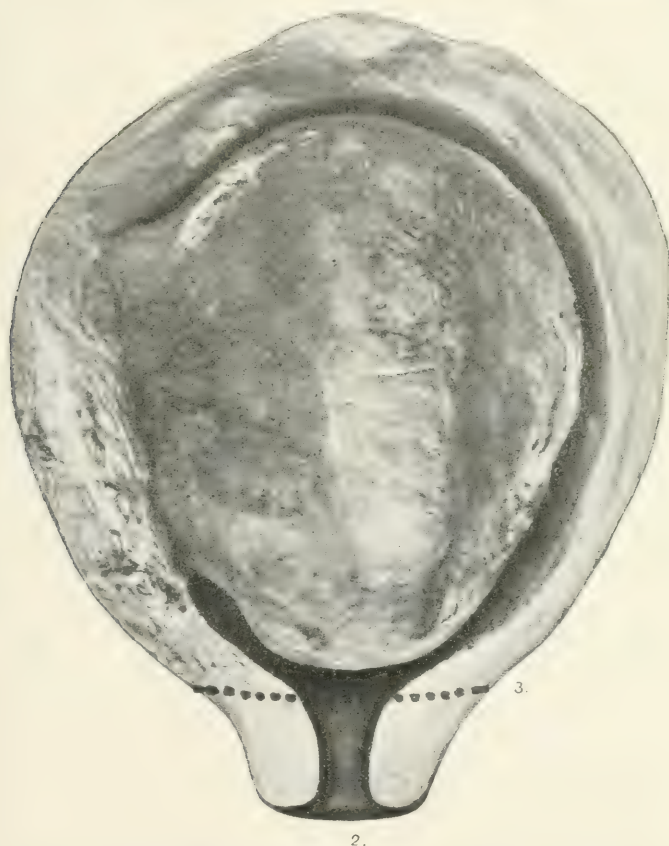


FIG. 4.—Semi diagrammatic picture of tumor at time of removal.
3. Line of amputation.

below by myomectomy. Most of this procedure could be accomplished with the finger in the uterus. For the first few days after admission patient ran a temperature between 101° and 102° and was discharged against advice on the third day. Her recovery was slow but finally complete.

CASE V.—C. N. 7486. Mrs. F. L., age twenty-six; I-para. Went into labor about term, April 30, 1906. On examining the patient it was found that a large submucous fibroid occupied the

cervical section of the uterus, blocking the birth of the child. Despite this it was decided, however, to try an internal podalic version. This was successful owing to the fact that the tumor, although the size of a child's head, was somewhat movable so that it was possible to draw the child out past the tumor. A manual extraction of the placenta was necessary. The child weighed 3750 gm. On July 8, a supravaginal hysterectomy was performed for suppurating myoma. In the interval between the delivery and the hysterectomy, the patient had been running a temperature of 99° and 103.4° , with a pulse around 100. After the hysterectomy, there was some rise of temperature for the first week and then a gradual settling down to the normal. Patient made good recovery.

F. TREATMENT.

In many instances no special treatment is necessary—in fact, numerous cases proceed with little or no medical attention into labor and even through the labor, when perhaps the complication is discovered for the first time.

It is wise, however, when the case is seen early—even in the absence of symptoms, to caution the patient about over-exercise, automobiling and the like, owing to the ease with which some complication may set in. These instructions can often be given without informing the patient of her real condition, where this is as yet unknown to her.

The complications we have to treat during pregnancy are to repeat chiefly:

1. Excessive vomiting.
2. Abortion.
3. Pain and an unusual amount of abdominal discomfort.
4. Hemorrhage from placenta previa or accidental hemorrhage.
5. Accompanying tubal or ovarian trouble.
6. Occasionally, cardiac manifestations.
7. Occasionally necrosis from autoinfection.

In the absence of a true toxemia, the excessive vomiting, which is seen from time to time in pregnancies complicated by myomata, is generally caused by incarceration, either of the uterus or of the tumor, in the pelvis, or from a twisted pedicle. By correcting these conditions, relief may be immediate. The *condition of either spontaneous or induced abortion may prove*, as before stated, a most serious complication and operation. I cannot impress this fact too strongly upon you. The bleeding may be tremendous. If the growth is in the lower zone or the

cervix proper, it is often most difficult to empty the uterus quickly and thoroughly and when this organ is even once thoroughly emptied, it may seem almost impossible to check the bleeding, owing to the presence of the tumor and to a frequently accompanying sclerosis of the uterine vessels. While tight tamponage often works satisfactorily, still it will fail at times. I would suggest an hysterectomy in the bad cases. In the simpler cases before attempting intrauterine manipulation, it is of real advantage to secure as thorough softening of the cervix as possible by means of tight vaginal tamponage for twenty-four to forty-eight hours with iodoform gauze. With the cervix softened and patulous, we should then perform a digital emptying of the uterus. Where this is impossible we use very gently placental forceps and Munde curette (which is large and dull), followed by tight tamponage with the use possibly of Momberg's method of aortic compression untill all danger of serious hemorrhage is passed.

I would repeat, *the so-called conservative treatment of the bad cases gives a high mortality and should not be followed.* The *pain and local tenderness* can usually be satisfactorily treated with rest and ice. The bad cases will demand, myomectomy or hysterectomy. Spontaneous hemorrhage—either accidental or from placenta previa, really the most alarming symptoms during any period of pregnancy—tends to be of greater import in the latter months. The treatment will depend entirely upon the size, location, or number of the growths. The severe cases are all more safely treated by laparotomy. It occasionally happens that a myoma becomes necrotic during pregnancy. This is rare but may be seen. When it occurs, the condition is dependent upon vascular nutritional disturbances and infection with the colon bacillus or from an infected Fallopian tube. Such a condition demands at once myomectomy or hysterectomy with or without Cesarean section.

During Labor.—Prolapsed cord, abnormal presentations, hemorrhage, have to be handled in their several well-known ways; always remembering that a laparotomy may be necessary. Actual dystocia from tumor obstruction is not as common as is generally supposed. Nature accomplishes wonders in her method of drawing up an interstitial or sessile subserous tumor out of the pelvis. This may even take place in the case of a pedunculated growth. Where an actual dystocia exists, the treatment sums itself up into the following alternatives:

a. Efforts at dislodgement of tumor in the subserous or pedunculated type, and delivering normally *per vaginam*.

b. With the above conditions and where dislodgement is impossible, a vaginal myomectomy and delivery from below.

c. Abdominal Cesarean section with hysterectomy or myomectomy depending on conditions present.

d. Abdominal myomectomy for pedunculated growth and allowing labor to proceed normally. (This I do not believe in.)

e. It may be possible even in a good-sized submucous or interstitial fibroid to deliver from below, past the growth, especially by version; but where there is any difficulty, it is better to *work from above*; for you all are aware of the serious danger of inflicting trauma upon such a growth, in the course of delivery, which will result in almost certain necrosis and gangrene, possibly general sepsis. Delivery from above under these circumstances will perhaps save the patient's life or at least shorten her ultimate convalescence markedly.

From the twenty-two actual cases of gangrene and suppuration of fibromyomata collected by M. G. Berger (Paris, 1907); and three cases reported by Fry in December, 1909, and from our own cases, we see how serious this complication really is. In Berger's cases, three of the nine following abortion lived. Those that lived were all treated with hysterectomy. The other twelve cases followed premature labor or labor at term with ten deaths. All presented hard labors. One of the three Fry cases died.

In our cases of known gangrene but one died. It is probable, however, that the two other cases that died of sepsis, had also an infection of the tumor. This could not, however, be positively ascertained. In the light of these statistics and of our general experience I am constrained to believe that in the puerperium, if the patient begins to show signs of an infective process in the tumor, such as undue pain, tenderness, and temperature, early operation should be resorted to. Considering the serious results that may follow gangrene or suppuration, I do not deem it wise to rely upon conservative treatment more than a very short time and I would strongly urge *early interference*. If some improvement does not occur after a few days of symptomatic treatment, delay means, as a rule, later regrets; for it is not unlikely that with the infected tumor, there is uterine infection too, which may be spreading laterally into the lymphatics or veins and which thus may end in the patient's death.

Finally, in cases without symptoms in the puerperium, do not attempt radical operation until late.

GENERAL CONCLUSIONS.

1. A myomatous condition of the uterus predisposes to sterility. Parvin states that while the average sterility is one in eight it is one in three, in women with myomata. Charpentier's figures, too, correspond closely to these.

2. The tendency to abortion is increased. In the bad cases, both spontaneous and artificial abortion may prove difficult to handle *per vias naturales* and most dangerous to the life of the individual. In the severe cases, where it is difficult to gain access to the cavity of the uterus proper, and in the presence of real hemorrhage, laparotomy is the operation of choice.

3. The great majority of the cases that do not abort early proceed through pregnancy, labor, and the puerperium with few or no symptoms; therefore operative interference is but rarely indicated during pregnancy, and is as a rule meddlesome midwifery. I make this statement cautiously, for I know well that in the minds of many it will be open to criticism. The operation of myomectomy during pregnancy is just now very popular, but I for one believe it is but *rarely indicated*. The results of *myomectomy* are none too good. I repeat that occasionally it may be wise to do a myomectomy, and occasionally necessary to do an hysterectomy, but as a rule *conservatism should be the watch word*.

4. Nature accomplishes wonders at the time of labor, overcoming any apparent dystocia, in a large percentage of cases. When delivering, avoid all possible trauma to the tumor.

5. Finally, with the development of the symptoms of gangrene in a myoma, during the puerperium, operate early to save the life of the patient.

TREATMENT OF OBSTRUCTION OF BOWELS DUE
TO MALIGNANT NEOPLASM.¹

BY

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EARLY operation for cancer of the bowel is hardly to be hoped for with the present diagnostic possibilities. Those cases which come to us for relief from obstruction due to malignant growth of the bowel are necessarily far advanced. Nine of the eleven cases below tabulated were referred for hasty operation for the relief of obstruction, the patients showing the conditions which indicate rapidly approaching dissolution from this cause. Some of them with bloody serum in the abdomen and widely distended and mottled bowels. This is naturally the experience of all operators, and we are not surprised to find the mortality immediately from the obstruction itself and as to the progress of the disease to be very high. The insidious onset of the disease, its obscure symptomatology, the careless neglect of stool examination in persons of the cancer age who have been progressively losing in weight with pain and obscure bowel symptoms, as well as the neglect to simply introduce the finger into the rectum for combined examination, contribute to a greater mortality, both immediate and remote, than might obtain in these cases.

It is not my purpose to go into an exhaustive discussion of the diagnosis of cancer of the bowel in this short paper. I may say, however, that it should be a reproach to any surgeon to be surprised on opening an abdomen in finding a growth that would have been palpable by the examining finger in the rectum. In many cases, however, because of the urgency of the symptoms, no time is allowable for more careful examination, and in some, where complete examination has been made, the diagnosis of malignant obstruction is established only after opening the abdomen. Nor is the size of the growth when palpable nor the extent of the malignant involvement easily discernible by the palpating hand, very small growths frequently being sufficient, by the contractions which they produce, to obstruct the bowel. Frequently omental and bowel adhesions, inflammatory in

¹Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

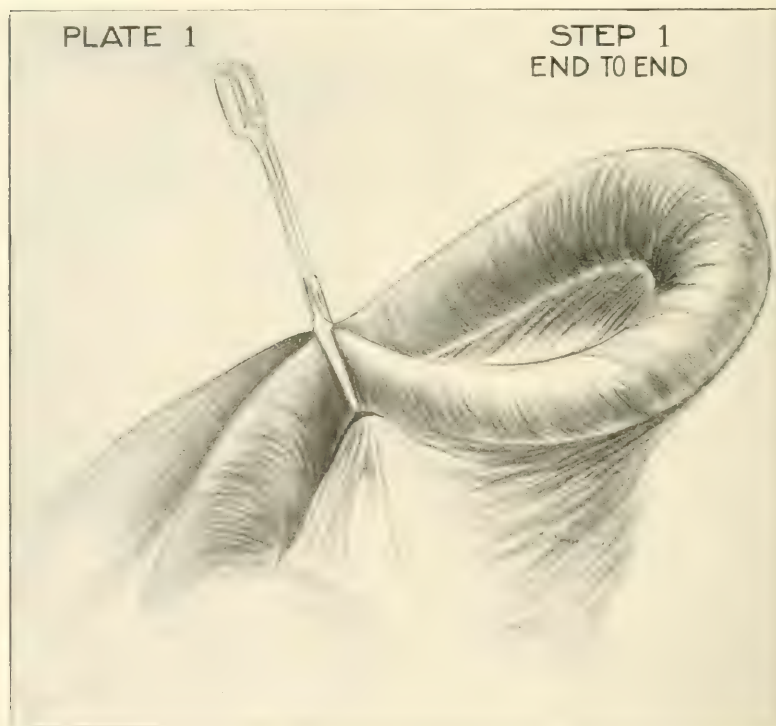
character, or accumulation of fecal matter at the point of obstruction may cause a small malignant growth to simulate a large tumor.

In these cases, particularly, as little time as possible must be lost in locating the obstruction, for in no other class of cases is time and limited exposure of the bowel and handling thereof so essential. I know of no more distressing condition, both to the delicacy of sense to the patient or to his comfort, than is the establishment of a preternatural anus for the relief of this condition. If the reestablishment of the bowel stream is to be accomplished, either by resection or enteroanastomosis without resection, no time must be lost in finding out the seat of the obstruction.

In obstruction, generally where physical examination does not give a clue to the location of the obstruction, we have followed this rule. If the vomiting has come on late in the history of the obstruction, it is probably located in the large bowel or in the lower part of the small bowel. If the vomiting has come on early, then the obstruction is probably higher up. In the latter case, a small median incision is made, the collapsed bowel found and followed to the distended, or the distended bowel followed back to its junction with the collapsed bowel. If the obstruction is low down, a small incision is quickly made over the cecum; if this is found to be distended with gas, then we know the obstruction to be in the large bowel. The hand or fingers quickly reaching over to the descending colon and sigmoid, not locating the trouble here, we quickly pass upward along the ascending colon to the hepatic flexure and along the transverse colon. Having located the obstruction, it is then attacked through the original opening or, if necessary, another suitable incision is made without delay. Where the obstruction has already produced marked tympany, even a large tumor may escape detection before the abdomen is opened. Frequently these growths are quite movable and easily delivered into the wound. In other cases because of short mesenteric attachment or because of malignant or inflammatory contraction, they can be reached only with great difficulty.

This is particularly true of fixed growths at or below the sigmoid. In these cases anastomosis can only be accomplished by such mechanical aid as the Murphy button. The bowel having been brought together by the button as a retaining agent, then the placing of supporting sutures is comparatively easy,

even in the presence of marked distention, a condition with which we frequently have to contend. This was the condition in Cases VIII, X, and XI. I have here an illustration of the placement of the Murphy button in Case XI. The drawing is made from specimen removed postmortem. This is of interest because of the necessarily close proximity of the anastomosis to the malignant growth. The conditions in this case were nearly exactly the same as the conditions in Case VIII, in which

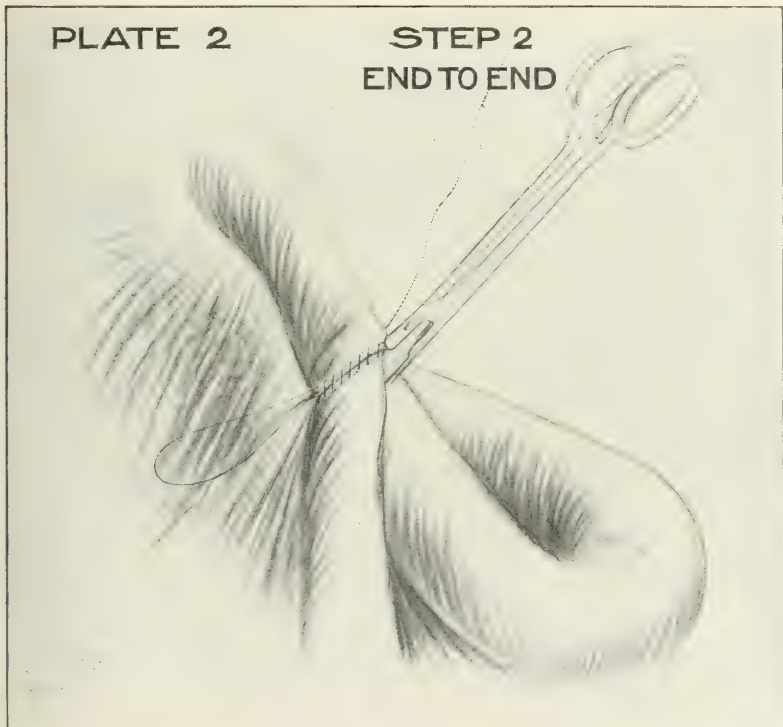


the anastomosis was made quite as near the malignant involvement. Yet this man has a reestablished bowel stream, is living in comfort, now nine months after the operation—a marked contrast to what his condition would be had we resorted to the operation of colostomy, as is usually done in these cases.

CASE I.—*Adenocarcinoma of Cecum. Empyema of Gall-bladder with Stone. Radical Resection. Obstruction Not Complete. Recovery.*

Miss M. A., Chicago. Nurse. Age thirty-nine. Admitted Saint Joseph's Hospital, May 3, 1900. Irregular, somewhat movable growth in right iliac region. Distended gall-badder.

Family history good, negative as to cancer. Operation: anesthetist, Dr. Calvin. Incision over cecum revealed a malignant growth occupying cecum, extending somewhat into the ileum. Cecum broadly resected, well into the small bowel and into the ascending colon. Anastomosis with Murphy button end to side. Incision over the gall-bladder. Solitary stone in the cystic duct with empyema of gall-bladder. Gall-bladder resected and small tube sewed into the cystic duct for drainage. Recovery

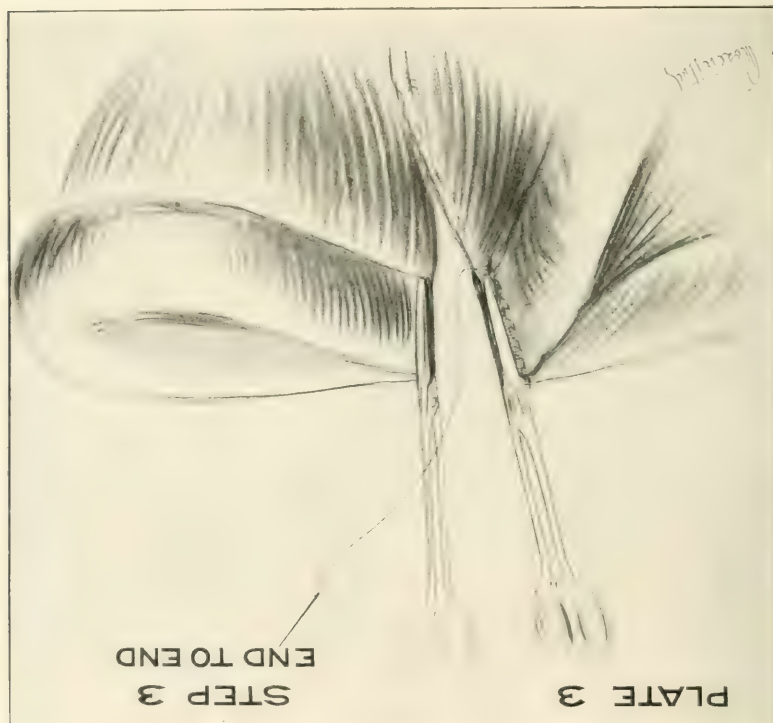
PLATE 2**STEP 2
END TO END**

from operation prompt. Patient still living ten years and four months after the operation and in good health.

CASE II.—Adenocarcinoma of Cecum. Radical Resection. Obstruction Not Complete. Recovery.

Miss M. L., residence, Germany. Age sixty-four. Nurse. Operation, July 13, 1903, at Saint Joseph's Hospital. Adenopapillo-carcinoma of cecum. Patient very fleshy. Large mass palpable through very thick abdominal wall in right iliac region. Anesthetist, Dr. Kane. Incision revealed malignant growth of cecum adherent to the anterior abdominal wall with omental adhesions. Operation: the adherent omentum, together with the cecum and colon up to the hepatic flexure, with an ellipse of the anterior abdominal wall where the growth was adherent,

and quite 3 feet of small bowel was resected in one piece. The end of the colon was closed and ileum anastomosed end to side with the descending colon by means of a Murphy button. The anastomosis was accomplished through a second incision on the left side. It was necessary to resect this large amount of small bowel in order to secure an anastomosis with the colon on the opposite side, without making tension on the mesentery. This patient made a very good recovery and lived five years and

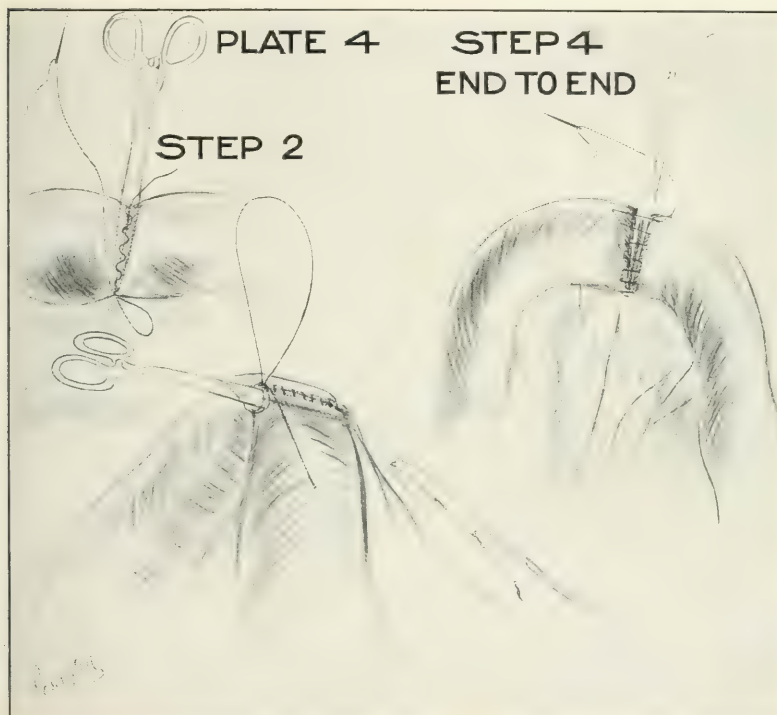


twenty-five days in good health, until July 8, 1908, when she died rather suddenly after a few days' illness in Dernbach, Germany. No postmortem was made. I am told death certificate reads "peritonitis."

CASE III.—*Cancer of the Cecum with Obstruction. Radical Operation. Recovery. Died two and three-fourths years afterward.*

Mrs. J. L. M., Bluffton, Ind. Age sixty. Housewife. Referred for operation by Dr. Hatfield. Operation, September 15, 1906, at Saint Joseph's Hospital. Anesthetist, Dr. Gilpin. Several inches of the colon and 8 inches of the ileum removed. Also a number of glands in the mesocolon. Patient recovered rapidly from operation. Remained in good health and free from all pain until March 16, 1907, when she developed nephritis.

A small growth was discovered in the neighborhood of the operation. Convulsions occurred and finally the nephritis subsided. She was able to take care of her household duties, and remained quite comfortable until June 14, 1909, when the tumor took on a rapid growth. It soon quite filled the greater part of the right half of the abdomen. Small hard nodular growth projected from the anus. She developed general dropsy and died of exhaustion, July 29, 1909, two years nine and a half months after the operation.



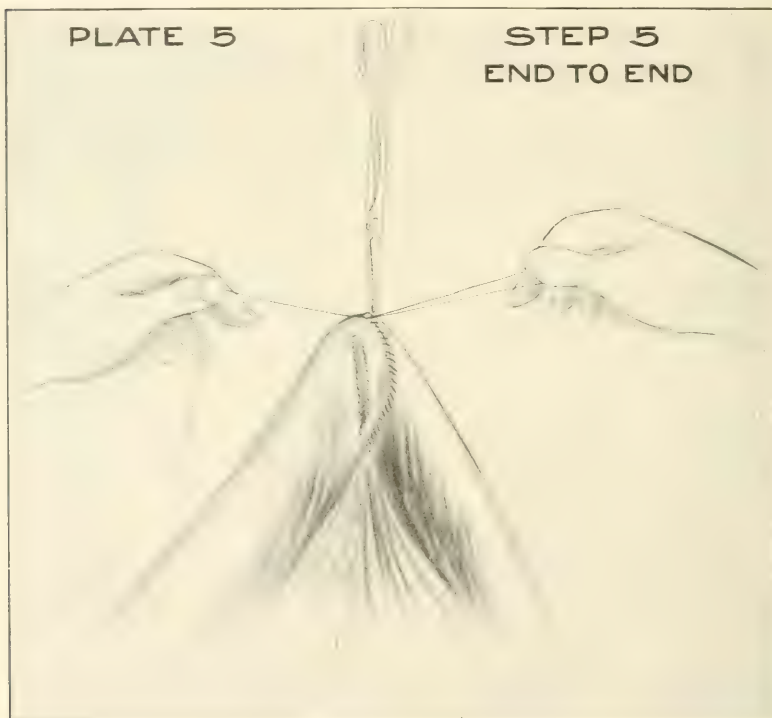
CASE IV.—*Cancer of Cecum with Complete Obstruction. Radical Resection. Death seven days afterward.*

Mr. H. O., Ft. Wayne, Ind. Age seventy. Laborer. Brought into the Saint Joseph's Hospital at night, suffering from obstruction of the bowels of several days' duration. Vomiting for three days. Immensely distended abdomen full of bloody serum. Operation: Resection of the cecum, December 15, 1908. Anesthetist, Dr. Titus. Ileum anastomosed with the ascending colon. Murphy button. Died December 22, 1908, seven days after the operation.

CASE V.—*Carcinoma above Sigmoid. Radical Resection. Complete Obstruction. Recovery from Operation. Recurrent*

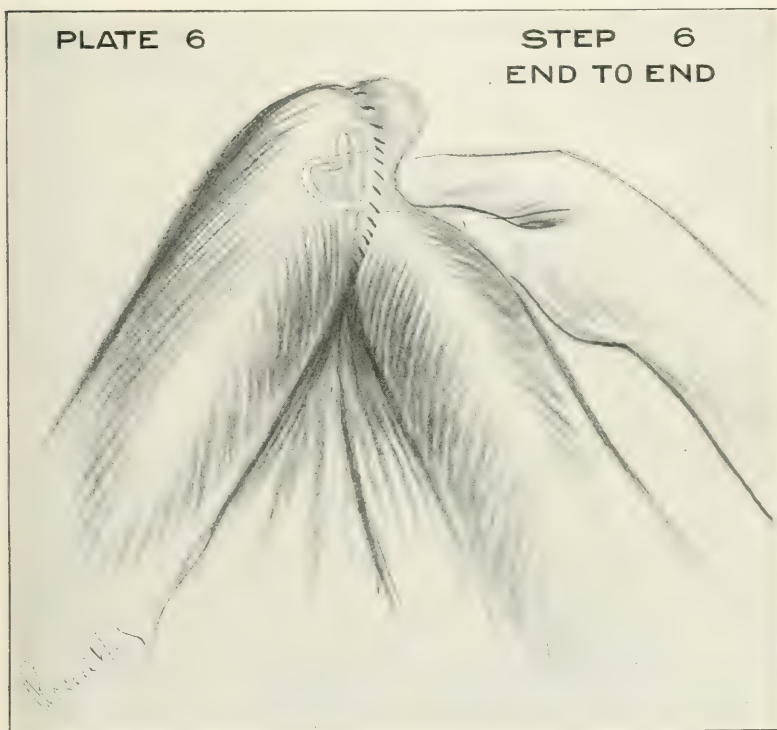
Carcinoma, second operation. Death few months after first operation.

Mr. G. W. F., Ft. Wayne, Ind. Age sixty. Florist. Referred by Dr. Drayer. Acute obstruction of the bowels. Admitted Saint Joseph's Hospital, June 12, 1909, at 9 P. M. Family history negative as to cancer. Father died of tuberculosis; mother of cardiac disease. Three sisters living. Patient gives a history of gradually increasing constipation for some months.



Duration of present acute obstruction, forty-eight hours. Patient vomiting, abdomen immensely distended, pulse 110, temperature 99.4°. Operation, 10.15 P. M. Anesthetist, Dr. Titus. Abdomen opened in median line. Tumor mass occupying colon above sigmoid promptly located and resected. Silk suture end-to-end anastomosis. About 6 inches of bowel with tumor mass removed. Patient made good recovery from the operation. Removed to his home sixteen days after the operation. June 28, 1909. October 23, four months later, the patient returned to the hospital because of hemorrhage of bowel. Many bowel movements daily with considerable loss of blood. Patient weak and anemic. Examination revealed a palpable growth high in the sigmoid. Diagnosis: recurrent carcinoma probably

at seat of previous anastomosis. Second operation, October 30. Abdomen reopened, seat of previous anastomosis located and found to be healthy, but the bowel was found to be involved in a new location lower down in the sigmoid. This we resected successfully, but the patient, whose condition was already very unsatisfactory, continued to grow worse until ten days later, when he died, five months after the operation.



CASE VI.—*Cancer Upper Rectum and Sigmoid. Complete Obstruction. Radical Resection. Recovery.*

Mrs. A. P., Huntington, Ind. Age sixty-one. Housewife. Admitted Saint Joseph's Hospital, September 15, 1909. Referred by Dr. Hicks. Family history negative as to cancer. Given usual cathartics which did not prove effectual. Constant use of syringe causing hemorrhoids. Lost 20 pounds in weight in the last week. Operated for obstruction of the bowels, September 15, 1909. Anesthetist, Dr. Titus. Median incision revealed carcinoma involving sigmoid with no metastases. Operation: resection of bowel well down toward the anus in the rectum and 2 1/2 inches above growth in sigmoid, end-to-end anastomosis by several rolls of silk suture. Recovery prompt. Left hospital, October 14, 1909. Report: patient still living in good

PLATE 7

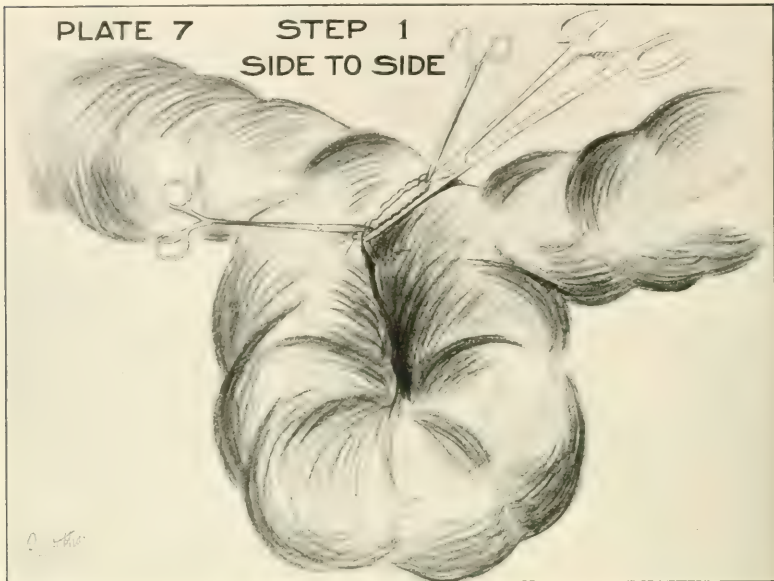
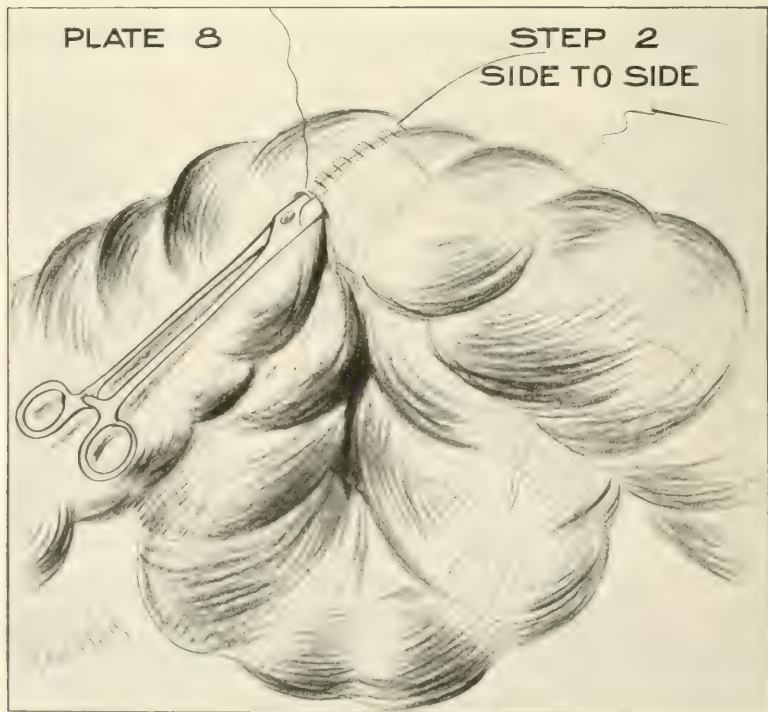
STEP 1
SIDE TO SIDE

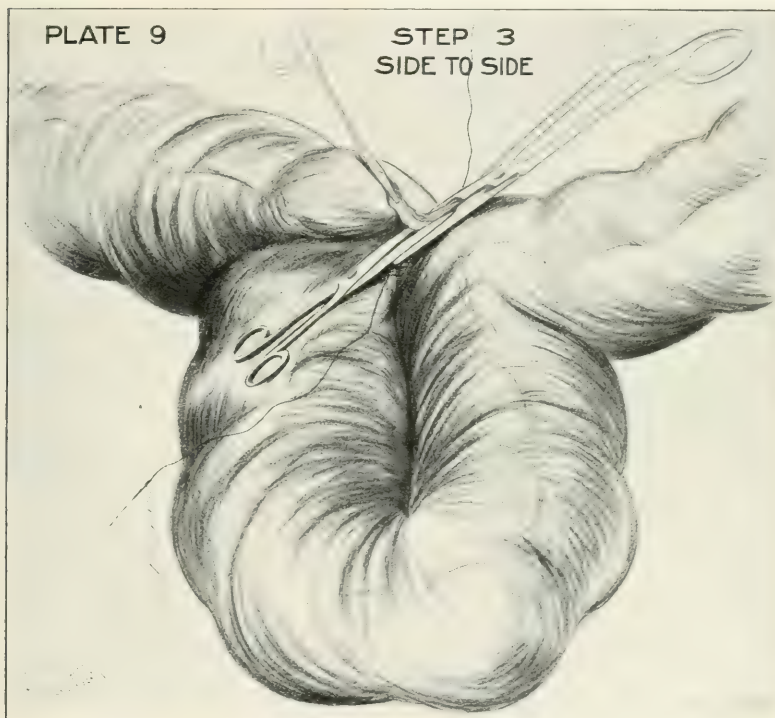
PLATE 8

STEP 2
SIDE TO SIDE

health. Stricture formed around site of anastomosis which was kept open by means of dilator. Stricture evidently not malignant, since it remained patent, and patient is in good condition one year after operation.

CASE VII.—*Carcinoma Above Sigmoid. Anastomosis Without Resection. Complete Obstruction. Recovery from operation and eleven months later patient comfortable and has gained in weight.*

Miss M. M., Ft. Wayne, Ind. Age sixty. Dressmaker. Admitted Saint Joseph's Hospital, September 30, 1909. Referred

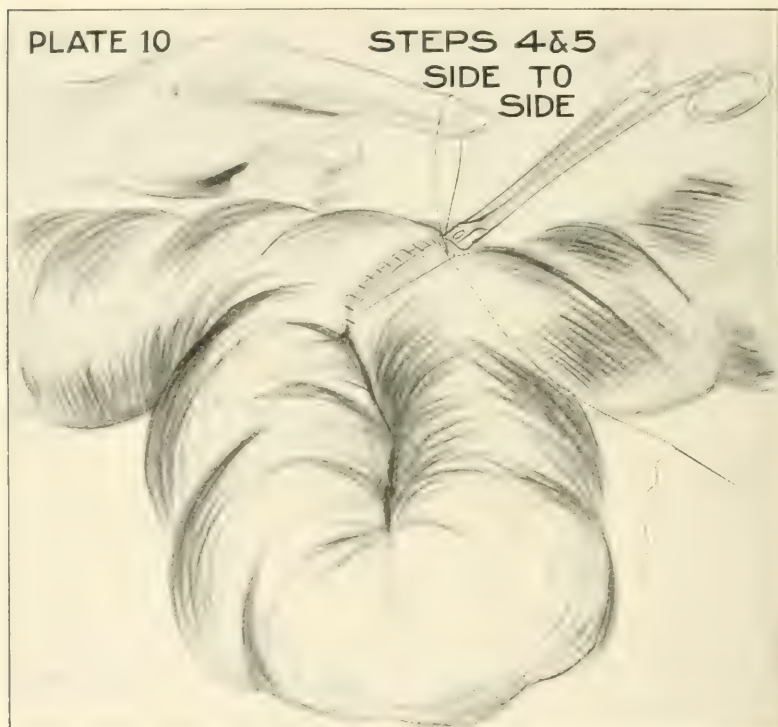


by Dr. Calvin. Obstruction of the bowels due to cancer. Operation: Anesthetist, Dr. Titus. Anastomosis without resection. Family history negative as to cancer. History: constipation with recurrent attacks of obstipation. Pain in the abdomen. Rapid loss in weight. Because of the serious condition of the patient, due to the obstruction, the abdomen was quickly opened and anastomosis made by means of the Murphy button with supporting suture, and the abdomen quickly closed. Patient did well after this operation. Twenty days later we felt justified in reopening the abdomen for the purpose of making a radical resection of the growth. The growth, however, because of evident involvement of neighboring structures, proved to be

inoperable and was left with the anastomosis intact, and the abdomen again closed. This patient now, eleven months later, is still comfortable and has gained in weight.

CASE VIII.—*Cancer Upper Rectum and Sigmoid. Anastomosis Without Resection. Complete Obstruction. Recovery.*

Mr. W. M. R., Spencerville, Ind. Age sixty-seven. Farmer. Admitted Lutheran Hospital, December 13, 1909. Operation: December 16. History: father died at eighty-seven, cause not known. Mother died at sixty-five of cancer of uterus. Five

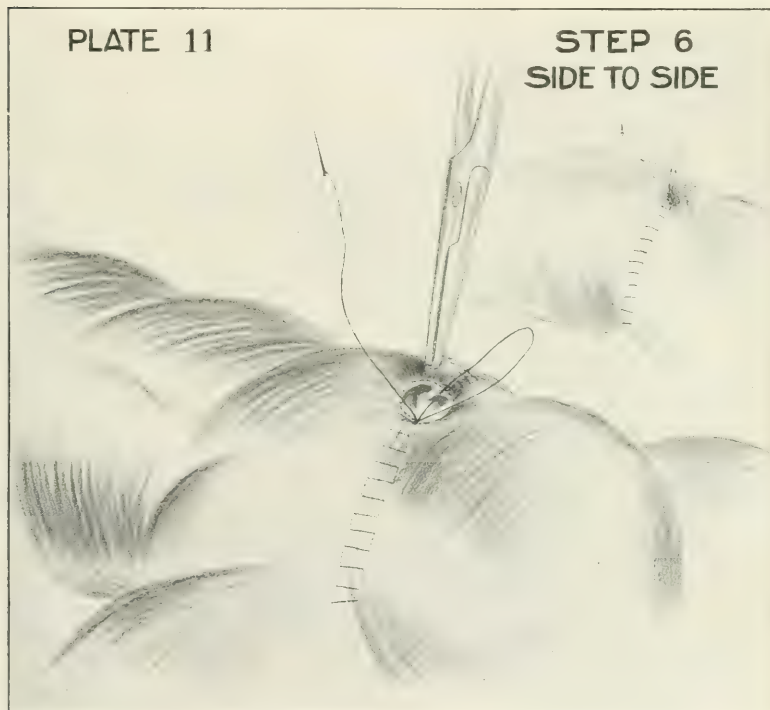


girls, six boys, all living and in good health. Previous history: diseases of childhood. Malaria at sixteen. Has enjoyed almost perfect health, with the exception of piles, for last twenty-five years. Constipation for last five years. Present history: December 7, could not get bowels to move with usual household cathartics, called local physician, who gave cathartics, enemas, also croton oil without effect. Came to hospital, December 13. Case referred for operation, December 16. Examination revealed a large distended abdomen. Patient vomiting and approaching collapse. Large mass about 4 inches from anus completely closing rectum. Operation: anesthetist, Dr. Eirich. Anastomosis sigmoid with lower rectum with Murphy button and

suture. Saw patient about September 5, 1910, has gained about 25 pounds. Has lost his cachexia, does not look like same patient. Works every day. Eight months and nineteen days after operation. Conditions in this case were nearly identical with conditions in Case XI.

CASE IX.—*Cancer Hepatic Flexure of Colon. Anastomosis Without Resection. Complete Obstruction. Recovery.*

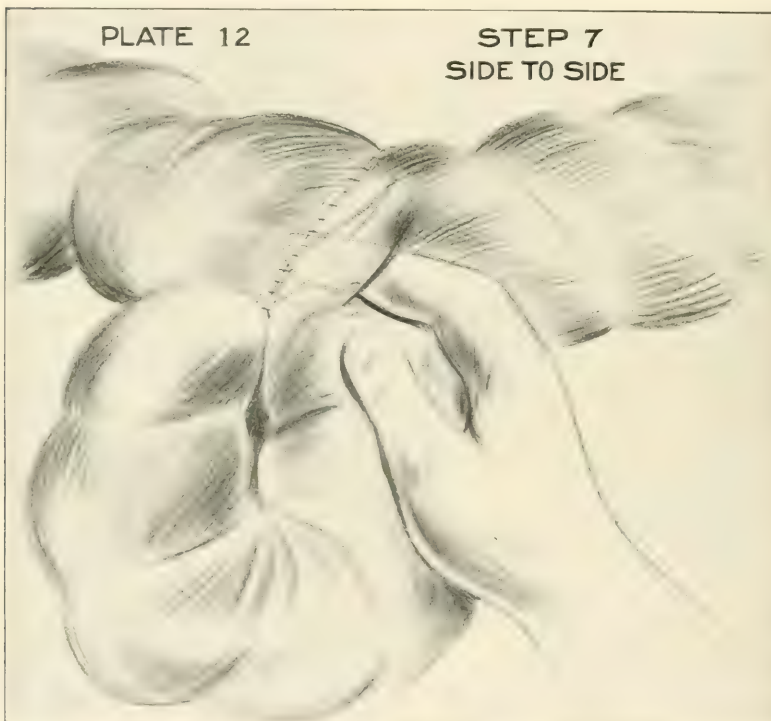
Mr. S. O. M., Ft. Wayne, Ind. Age seventy. Laborer. Admitted Saint Joseph's Hospital, December 21, 1909. Case



referred by Dr. Schilling. Operation: anesthetist, Dr. Titus. Anastomosis ascending colon to middle of transverse colon by means of clamp and suture. History negative as to cancer. Previous history: abscess of the liver twenty-five years ago, following injury. Present history: fulness in abdomen. Pain in left side, moving toward the right. Bowels could not be moved. Felt a growth in the right side below ribs. Vomiting twenty-four hours' duration. Examination revealed growth at hepatic flexure of the colon. Patient still in good condition and comfortable eight months and twenty-five days after operation.

CASE X.—*Cancer of the Sigmoid and Upper Rectum. Anastomosis Without Resection. Complete Obstruction. Death ten days after operation.*

Mr. J. M. M., Columbia City, Ind. Age seventy-four. Farmer. Admitted Saint Joseph's Hospital, July 9, 1910. Case referred by Dr. Greiser. Anesthetist, Dr. Quinn. The sigmoid anastomosed with upper rectum by means of the Murphy button and supporting suture. Patient brought in in semiconscious condition. Abdomen immensely distended, pulse rapid. Duration of obstruction one week. Vomiting regularly for two days. History of bowel trouble, six months. Rapid loss of weight. Bowels moved next day after operation. Passed the button

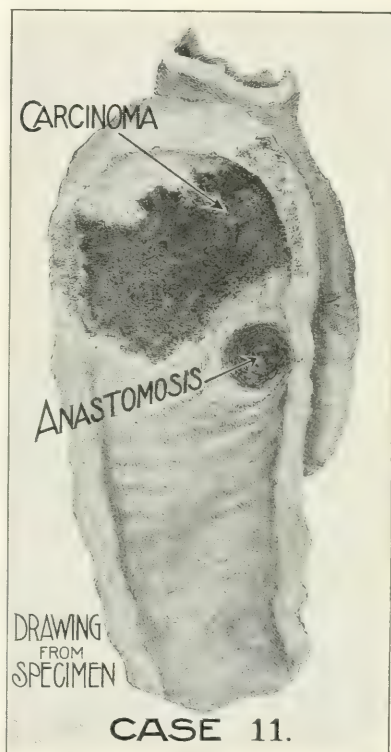
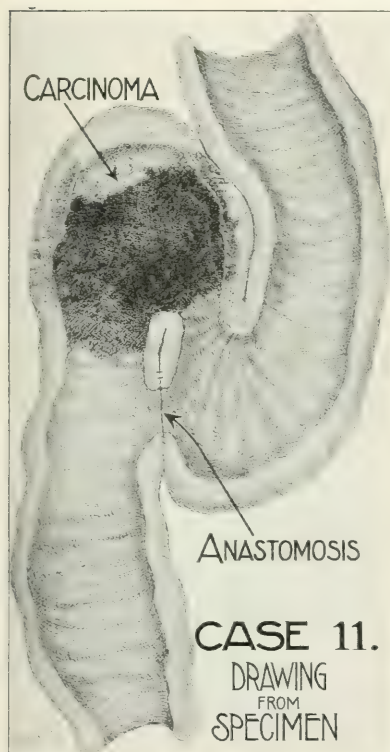


on seventh day. Developed a colliquative diarrhea. Died of exhaustion, July 19, ten days after operation.

CASE XI.—*Carcinoma Sigmoid and Upper Rectum. Anastomosis Without Resection. Death from Bronchopneumonia three days after operation.*

Mr. P. K., Ft. Wayne, Ind. Age seventy-five years eleven months. Laborer. Referred for operation by Dr. McArdle. Acute obstruction in large bowel due to malignant growth. Tumor palpable by finger in the rectum. Obstruction with vomiting several days. Abdomen immensely distended. Operation, August 7, 1910, Saint Joseph's Hospital, 10 P. M. Anesthetist, Dr. Titus. Abdomen opened left of median line; revealed

carcinoma involving upper rectum and sigmoid firmly fixed to the neighboring pelvic structures. Anastomosis was made between the bowel below and above the growth by means of a Murphy button which was fixed in the upper limb of the anastomosing bowel in the usual way. The other half of the button was passed through the anus by an assistant and grasped by the operator and locked through a small opening. A double layer of retaining sutures was placed about the button. Patient died



three days after the operation. Postmortem examination revealed death to be due to bronchopneumonia and chronic interstitial nephritis. No infectious peritonitis was found in the abdomen. Seat of anastomosis found to be in good condition with very few adhesions.

COMMENTS.

It will be noted in the eleven cases reported, five are female and six male, which is not contrary to the rule. In most, if not all, of the large collections of cases reported cancer of the bowel is more prevalent in male than in female, as in Peter-

mann's report of 117 carcinomata of the bowel; in 115 cases sixty-eight were males and forty-seven females. Anchutz's series, 126 cases, quoted by Petermann, gave eighty-nine males and thirty-seven females.

In this class of cases where rapid and efficient work is so necessary, the bowel to be resected is usually not easily accessible. Nor can any considerable amount of the bowel be brought into the wound, by reason of the distention which nat-



urally goes with an obstruction of many hours' or even of several days' duration. The emptying of the bowel by means of trocar is a slow process and quite disappointing, as we do not, as a rule, get a continuous stream of gas or stool; this procedure, too, carries with it a certain amount of danger of infection and additional trauma. The placing of bowel clamps or bowel ligatures for the purpose of controlling leakage during an anastomosis or resection has also certain difficulties, especially in these cases. For this reason I have permitted myself

to take the liberty in this paper of briefly describing by means of a few illustrations an original method of bowel anastomosis. It has the advantage of keeping the bowel practically closed until the anastomosis is complete, requires no special instrument, does away with the provisional bowel clamps, is quickly performed and efficient.



DESCRIPTION OF OPERATION.

End-to-End.

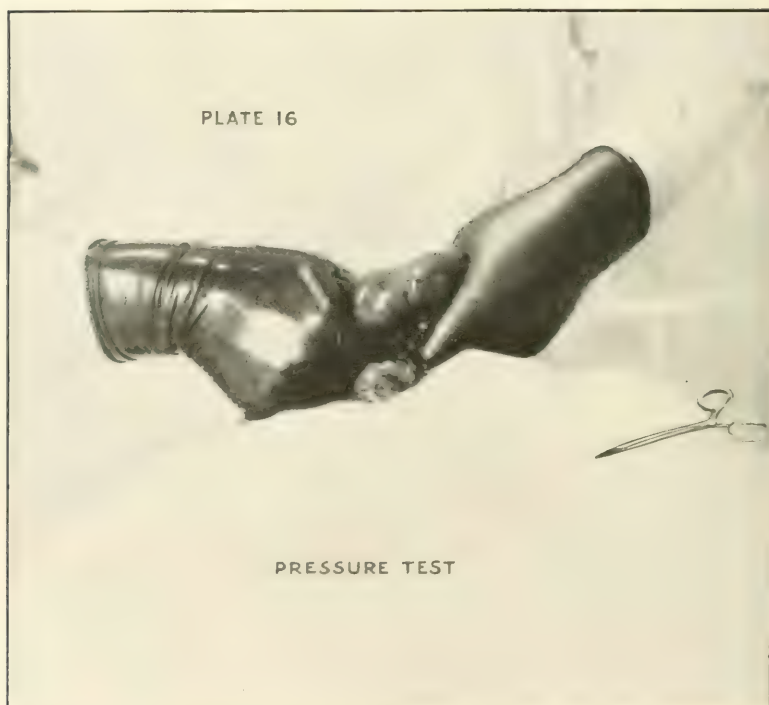
End-to-end anastomosis will probably be most easily illustrated by a demonstration of resection of small bowel.

Step No. 1.—Shows the small bowel laid together at the point where the end-to-end anastomosis is to be made. The forceps should grasp the bowel only and should not go beyond the mesenteric border in either limb of the bowel, yet should go quite up to the mesenteric border.

Step No. 2.—Illustrates the forceps turned over presenting what we will term the posterior suture line. The suture be-

ginning at the distal margin of the bowel—that is, that margin nearest the lock of the forceps—and is continued on, including muscularis and serosa, to the mesenteric border. The needle is now passed through the mesentery so that it presents on the anterior surface, and is to be used with the same thread in making the anterior suture line.

Step No. 3.—The bowel to be resected is grasped with the second pair of forceps and divided between the two forceps,



and cut surfaces being immediately cauterized with pure carbolic acid. Care should be taken not to cut too close to the forceps. The mesentery is now also divided, as shown in the illustration.

Step No. 4.—By means of the needle already brought forward, as described in step 2, the anterior bowel wall, by means of a continuation of the suture, is sewed over the blades of the forceps, the stitches including muscularis and serosa. This suture buries the forceps in the same manner as described in

simple anastomosis without resection and is carried around the forceps, forming a purse string.

Step No. 5.—As the forceps is withdrawn, the purse string is drawn tight and the anastomosis is complete, with the exception of separating the crushed end of the bowels which now lie within the suture lines; that is, the crushed portions lie endointestinally. If a second layer of sutures is desired, this may be made by simply rotating the forceps and applying the suture before withdrawing the forceps.

Step No. 6.—Now invaginate the bowel with the finger so as to separate the crushed ends, lying as they do within the bowel. It will have been noted that the anastomosis has been accomplished before the bowel is actually opened.

Side-to-Side.

Step No. 1.—In simple anastomosis without resection, say of the large bowel, the two limbs of the bowel to be anastomosed are brought together by means of two pairs of mosquito forceps or two small sutures which are held by an assistant.



The bowel is then grasped by a pair of ordinary Kocher hemostatic forceps which are closed upon them with crushing effect, as in illustration No. 1.

Step No. 2.—The forceps are then turned over, presenting the posterior surface for suture line. A silk suture is then placed, picking up the muscularis and serosa in the ordinary manner of bowel suture, starting at the bowel nearest the lock of the forceps and carried forward to the tip. By rotating the the forceps a second suture line may be made.

Step No. 3.—The forceps are now turned back in the position in which they were when the bowel was first grasped. The needle and thread are left for the continuation of the suture

anteriorly. That portion of each limb of the bowel which protudes from the grasp of the forceps is cut away by means of a pair of scissors or a knife. This surface is immediately cauterized with pure carbolic acid.

Step No. 4.—With the needle already in place, continue the suturing anteriorly in such a manner as to fold the bowel over the forceps, burying it.

Step No. 5.—Having reached the end of the suture line, a loop of the thread is kept long, while the needle is passed around the forceps in the form of a purse string. By rotating the forceps a second line of suture can be placed here if desired.

Step No. 6.—As the forceps is withdrawn, the purse string is tied, care being taken on withdrawing the forceps and tightening the suture to see that the crushed bowel remains interior to the purse string. The anastomosis is now complete. The portion of bowel crushed by the forceps is entirely endo-intestinal.

Step No. 7.—Invaginate the bowel with the finger, separating the surfaces which are crushed together. The finger covered with the invaginated bowel is thrust through the anastomosing opening. Gas will immediately pass from one bowel to the other.

REVIEW OF LITERATURE.

In the review of the literature of cancer of the bowel I have appended 323 cases with reference to duration of life after operation. In Petermann's cases, out of 117 carcinomata of the bowel, over 40 per cent. had produced obstruction. He found malignant growths occur most frequently where the bowel stream is slowest and most subject to mechanical and chemical irritation, as follows: ..

Sigmoid,	56 cases
Transverse colon,	17 cases
Cecum,	13 cases
Hepatic flexure,	12 cases
Splenic flexure,	8 cases
Ascending colon,	7 cases
Descending colon,	4 cases

Preternatural anus was made in thirty cases of obstruction due to cancer; mortality, 46 per cent. Resection of the tumor in fourteen cases of obstruction; mortality, 79 per cent. In

J. von Mikulicz's 106 cases of cancer of the bowel, twenty-three were brought to the clinic with acute obstruction. Mikulicz speaks of the fact that carcinoma of the bowel may exist for a long time; in fact, much longer than is ordinarily suspected, mentioning a case of his own observation, where the patient lived in comparative comfort four and a half years after a colostomy had been done. He places the period of latent existence or quiescence of cancer of the bowel at from one-half to three years. Of the 323 cases operated upon:

Seventy-five died, having lived less than ten days after the operation.

Fifteen died, having lived less than thirty days after the operation.

Seventeen died, having lived less than three months after the operation.

Twenty-three died, having lived less than six months after the operation.

Sixteen died, having lived less than one year after the operation.

Thirteen died, having lived less than two years after the operation.

Six died, having lived less than three years after the operation.

Two died, having lived less than four years after the operation.

One died, having lived less than five years after the operation.

Three died, having lived more than five years after the operation.

At the time of this report:

Fifteen cases are living, having survived the operation five years or more.

Seven cases are living, having survived the operation four years.

Twelve cases are living, having survived the operation three years.

Twenty-six cases are living, having survived the operation two years.

Twenty cases are living, having survived the operation one year.

Twenty-five cases are living, having survived the operation six months.

Twenty-nine cases are living, having survived the operation three months.

Sixteen cases are living, having survived the operation one month.

Two cases are living, having survived the operation ten days.
Total, 323 cases.

In 334 cases, including my cases, twenty-one lived five years or more; thirty lived four years or more; forty-eight lived three years or more; eighty-eight lived two years or more; 125 one year or more; 176 six months.

CONCLUSIONS.

Obstruction of the bowel due to carcinoma is not hopeless as to cure by radical operation.

Incomplete excision of all cancerous tissue must necessarily result in recurrence of the growth. Anastomosis without resection of the malignant growth should be the operation of election in obstruction due to cancer, where the radical operation—that is, complete excision—is impossible.

Anastomosis without resection low in the pelvis, where the bowel is accessible with difficulty can be successfully accomplished by the assistance of the Murphy button.

Anastomosis without resection probably bears the same relation to cancer of the bowel as does gastroenterostomy to cancer of the pylorus.

The clamp-and-suture method of bowel anastomosis, as described, is practical, rapid, and trustworthy, and applicable in a large variety of bowel cases requiring resection or anastomosis.

INTESTINAL CANCER.

LENGTH OF TIME OF SURVIVAL AFTER OPERATION.

BIBLIOGRAPHY.

Ashton. *Maryland Med. Jour.*, 1892, xxvii, 773; one case, three and one-half months, living.

Bars and Robson. *Lancet*, Lond., 1895, i, 1513; one case, eleven days.

Barton. *Maryland Med. Jour.*, 1892, xxvii, 801; five years twenty-three days, living.

Barton. *Maryland Med. Jour.*, 1893, xxix, 335; forty-three hours.

Battle. *Lancet*, Lond., 1898, ii, 1265; one case, three weeks, living.

Benton. *Glasgow Med. Jour.*, 1902, lvii, 36; one month, living.

Bidwell. *West Lond. Med. Jour.*, 1901, vi, 124; one month two days, living.

Blake. *Bost. Med. and S. Jour.*, 1900, cxliii, 6; four days.

Booth. *Med. Rec.*, N. Y., 1899, lv, 561; six months twenty-two days, living.

Boucher. *N. York Med. Jour.*, 1902, lxxv, 241; five weeks, living.

Bouilly. *Bull. et mém. Soc. de chir. de Par.*, 1888, xiv, 601; two months living.

Bowker and Worral. *Australas. Med. Gaz.*, Sidney, 1899, xviii, 388; eleven months twenty days, living.

Coley. *Ann. Surg.*, Phila., 1900, xxxi, 244; five months, living.

Comte. *Rev. méd. de la Suisse*, Rom., Geneve, 1890, x, 402; seven and one-half months.

Conklin. *Buffalo Med. Jour.*, 1901-2, xli, 168; three months three weeks, living.

Eccles. *Brit. Med. Jour.*, 1900, i, 69; six months, living.

Edmunds. *Transact. Clin. Soc. Lond.*, 1897, xxx; first case died five years ten months after operation; death partly due to alcohol; second case died three years three months after operation.

Fowler. *Brooklyn Med. Jour.*, 1900, xiv, 136; two and one-half years, living.

Fraikin. *Bull. Soc. d'Anat. et Physiol. de Bordeaux*, 1899, xx, 89; died twenty-six hours after operation.

Golding-Bird. *Tr. Clin. Soc. Lond.*, 1885-6, xix, 70; died ten days after operation.

Goullioud. *Echo Med. de Toulouse*, 1901, xv, 570; one month twenty-one days, living.

Goullioud. *Assoc. franc. de Chir.*, Par., 1901, xiv, 529; four months seven days, living; second case, four months five days, living; third case died few hours after operation; fourth case, seven months twenty-seven days, living.

Heaton. *Lancet*, Lond., 1901, i, 928; one year six months, living.

Hobson. *Med. Rec. N. Y.*, 1893, xliii, 280; one month after operation, living, but relapse is expected.

Hochenegg. *Archiv. f. klin. Chir.*, Berl., 1902, lxxviii, 172; five months after operation, living, other cancer developed.

Hofmökl. *Bericht. D. K. Krankenanst., Rudolf Stift.*, in Wien, 1888, 318; two months, living.

Horrocks. *Brit. Med. Jour.*, 1894, i, 236; one month twenty-five days, living.

Hott. *Lancet*, Lond., 1894, i, 538; three months twenty-four days, living.

Imbert and Gilis. *Bull. et mém. Soc. de chir. de Par.*, 1901, xxvii, 357; two months sixteen days, living.

Israel. *Berlin. klin. Wchnschr.*, 1894, xxxi, 275; five months six days, living; patient is eighty-five years old.

Israel. *Ibid.*, 1895, xxxii, 110, same patient mentioned in previous article lived sixteen and one-half months, died of pneumonia.

Jeannell. *Bull. et mém. Soc. de chir. de Par.*, 1886, xii, 5; died thirteen days after operation.

Johnson. *Boston Med. and Surg. Jour.*, 1899, xcli, 364; two months, living.

Keetley. *Lancet*, Lond., 1896, ii, 229; first case, one year six and one-half months, living; second case died about two months after operation.

Knaggs. *Lancet*, Lond., 1898, i, 1042; four months after operation, living.

Korte. *Verhandl. d. deutsch. Gesell. f. Chir.*, Berl., 1900, xxix, 61; first case, eight and one-half years, living; second case, six years, living; third case, five and one-fourth years, living; fourth case, one year, living; fifth case, ten months, living; sixth case, five years ten months, living; seventh case, three years, living; eighth case, died with relapse one and three-fourths years after operation; ninth case, died one year after operation.

Korte. *Deutsche med. Wchnschr.*, Leipz., 1900, Ver. Beil., 93; five months four days, living.

Kiemmer. *Rev. méd. de la Suisse Rom.*, Geneve, 1898, xviii, 264; four months, living.

Lange. *Med. Rec. N. Y.*, 1893, xliii, 279; died on tenth day after operation.

LeDentre. *Bull. Méd.*, Paris, 1901, xv, 753; three years after operation, patient was again operated for cancer of ovary.

Lee and Gould. *Lancet*, Lond., 1885, ii, 1091; died sixty-six hours after operation.

Lentaigue. *Dublin Jour. Med. Sc.*, 1898, cvi, 455; first case died thirteen months after operation; second case, two years, living.

Lilienthal. *Ann. Surg.*, Phila., 1898, xxvii, three and one-half years after operation, living; no recurrence.

McCormac. *Lancet*, Lond., 1892, i, 310; ten months, living.

Macewan. *Scott. Med. and Surg. Jour.*, Edinb., 1898, ii, 1; six months, living.

McGillivray. *Transact. M. Chir. Soc. Edinb.*, 1897-8, xvii, 51; three years four months, living.

McKay. *Austral. Med. Gaz.*, Sidney, 1902, xxi, 362; died eighth day.

Malard. *Glasgow Med. Jour.*, 1901, lvi, 192; ten months after operation, living.

Montgomery. *Phila. Med. Times*, 1888-9, xix, 408; died third day after operation.

Morestin. *Bull. et mém. Soc. anat. de Par.*, 1901, lxxvi, 589; died ten days after operation.

Morton. *Transact. Path. Soc. Lond.* 1892-3, xlv, 89; died three months after operation.

Musser and Morton. *Univ. Med. Mag.*, Phila., 1895-6, viii; lived nine months after operation.

Newman. *Glasgow Med. Jour.*, 1901, lvi, 205; six months, living.

Pantzer. *Indiana Med. Jour.*, 1897-8, xvi, 267; six months, living.

Petroff. *Compte rend. Cong. internat. de Med.*, Mosc., 1899, v, 122; died five days after operation.

Pigeon. *Brit. Med. Jour.*, Lond., 1891, i; died twenty-six days after operation.

Reverdin. *Arch. prov. de Chir.*, Par., 1893, ii, 25; five and one-half months, living.

Roper. *Trans. Clin. Soc. Lond.*, 1892-3, ii, 1235; died year after; recurrence in liver.

Sacre. *Jour. de méd. chir. et pharm.*, Brux., 1889, lxxxvii, 233; died second day.

Schopf. *Jahrb. d. Wien. k. Krankenanst.*, Wien, 1896, iii, 1044; three months, living.

Scott. *Brit. Med. Jour.*, 1900, ii, 663; six months, living.

Seefisch. *Deutsche med. Wchnschr.*, Leipz., 1898, xxiv, Ver. Beil., 110; ten months after operation, living.

Sentaigne. *Trans. Roy. Acad. M. Ireland*, Dubl., 1898, xvi, 192; first case, died thirteen months after operation; second case, two years, living.

Small. *Intercolon. Med. Jour.*, Australas.; Melbourne, 1896, i, 413; died twenty-three days after operation.

Smith. *Am. Med.*, Phila., 1902, iii, 780; one year, living.

Souligoux. *Assoc. franc. de Chir.*, Par., 1901, xiv, 526; two years, living.

Storchi. Morgagni, Milano, 1897, xxxix, 288; more than a year, living.

Weir. *Ann. Surg.*, St. Louis, 1886, iii, 469; two and one-half months after operation, living.

White. *Quart. Med. Jour.*, Sheffield, 1898-9, vii, 318; three and one-half years after operation, living.

Zimmermann. *Zeit. f. klin. Chir.*, Tübing., 1900, xxviii, 303; Case 1, fourteen years, living; Case 2, two and one-half years, living; Case 3, one and three-fourth years, living; Case 4, five and one-half months, living; Case 5, five and one-half months, living; Case 6, five months, died few weeks after left hospital.

Syme. *Lancet*, Lond., 1904, i, 148; three months after operation, living.

Petermann. *Arch. f. klin. Chir.*, Berl., 1908, lxxxvi, 53-131; *Resection of tumor*: Case 1, died two days after operation; Case 2, died six hours after operation; Case 3, died two days after operation; Case 4, died three weeks after operation; Case 5, died six days after operation; Case 6, died twelve hours after operation; Case 7, died three days after operation; Case 8, died fourteen hours after operation; Case 9, died twelve hours after operation; Case 10, died six days after operation; Case 11, died two days after operation. *Enteroanastomose*: Case 12, died eight days after operation; Case 13, died two days after operation; Case 14, died three weeks after operation; Case 15, died five weeks after operation. *Anus præternat.*: Case 16, died twelve hours after operation; Case 17, died two days after operation; Case 18, died ten days after operation; Case 19, died two days after operation;

Case 20, died two days after operation. *Enteroanastomose*. Case 21, died three-fourths of a year after operation (marasmus); Case 22, died twelve hours after operation; Case 23, died two days after operation; Case 24, died two months after operation (marasmus); Case 25, died three days after operation; Case 26, died three months after operation; Case 27, died four months after operation; Case 28, died eight days after operation; Case 29, died three days after operation (peritonitis); Case 30, died eight days after operation; Case 31, died two days after operation; Case 32, died two days after operation; Case 33, died one day after operation; Case 34, died one day after operation; Case 35, died two months after operation (cachexia); Case 36, died two months after operation (marasmus); Case 37, died two days after operation (peritonitis); Case 38, died five months after operation (peritonitis). *Exploratory Laparotomy*: Case 39, died two days after operation; Case 40, died ten days after operation; Case 41, died fourteen days after operation; Case 42, died five days after operation; Case 43, died three weeks after operation; Case 44, died three weeks after operation; Case 45, died three-fourths of a year after operation (cachexia); Case 46, died four weeks after operation. *Abscess incision*: Case 47, died two months after operation; Case 48, died four months after operation; Case 49, died four months after operation; Case 50, died six weeks after operation. *Anus preternat.*: Case 51, died three months after operation; Case 52, died four months after operation; Case 53, died two days after operation; Case 54, died four months after operation. *Enteroanastomosis*: Case 55, died four months after operation; Case 56, died six months after operation; Case 57, died seven months after operation; Case 58, died six weeks after operation; Case 59, died eight days after operation; Case 60, died one-half year after operation; Case 61, died three months after operation; Case 62, died two months after operation; Case 63, two months, living. *Radical Operation, resection with circular suture*: Case 64, died three-fourths year, after operation; Case 65, died six days after operation; Case 66, died seven days after operation; Case 67, died seven days after operation. *Resection with lateral apposition*: Case 68, died three-fourths day after operation (cancer of liver); Case 69, one and one-fourth days, sound and well. *Resection with enteroanastomosis*: Case 70, died seven days after operation; Case 71, died five days after operation; Case 72, three and one-fourths years after operation, living; Case 73, died six weeks after operation (apoplexy); Case 74, two and one-half years, living; Case 75, two years after operation, living; Case 76, died fourteen days after operation (marasmus); Case 77, died five months after operation (cancer of liver); Case 78, three years after operation, living; Case 79, died three months after operation; Case 80, one year, living; Case 81, four months, living; Case 82, seven and one-half years, living; Case 83, died eight days after operation; Case 84, six and one-half years, living; Case 85, died two and one-half months after operation; Case 86,

died two days after operation; Case 87, died six weeks after operation; Case 88, died second day after operation; Case 89, three and one-half years, living; Case 90, died four months after operation; Case 91, died second day after operation; Case 92, died three months after operation; Case 93, died few months after operation (cancer of liver); Case 94, more than two years, living; Case 95, died eight months after operation (cachexia); Case 96, more than two years, living; Case 97, died one year after operation (cancer of liver); Case 98, died one year after operation (cancer peritonitis); Case 99, one and one-half years after operation, living; Case 100, one year living; Case 100, one year after operation, living; Case 101, three-fourths year after operation, living; Case 102, eight months after operation, living; Case 103, six months after operation, living. *Operation at three sessions*: Case 104, five months after operation, living (peritonitis); Case 105, eight years, sound and well; Case 106, died three and one-half years after operation (cancer of liver); Case 107, died eight days after operation; Case 108, died two days after operation; Case 109, three and one-half years, perfectly well; Case 110, three and one-half years, perfectly well; Case 111, died nine months after operation (cancer of ovary); Case 112, three months, living; Case 113, died five months after operation (cancer of liver); Case 114, died seven months after operation (recurrence); Case 115, died two days after operation; Case 116, died eight days after operation; Case 117, died two months after operation.

Littlewood. *Lancet*, Lond., 1903, i, 1511; Case 1, two years after operation, living; Case 2, one and one-fourth years after operation, living; Case 3, seventeen months after operation, living; Case 4, two years after operation, living; Case 5, one and one-third years after operation, living; Case 6, two years after operation, living; Case 7, seven months after operation, living; Case 8, died one month twenty days after operation; Case 9, two and one-half months after operation, living; Case 10, died six days after operation; Case 11, died six days after operation; Case 12, died six days after operation; Case 13, three years after operation, living; Case 14, one year after operation, fairly well.

Woollcombe. *Brit. Med. Jour.*, Lond., 1903, i, 71; Case 1, died one year after operation; Case 2, two years after operation, living.

Schloffer. *Beiträge z. klin. Chir.*, Tübingen, 1903, xxxviii, 150, 492; Case 1, died one month after operation; Case 2, died two days after operation; Case 3, died eight days after operation; Case 4, three years after operation, living; Case 5, one and one-fourth years after operation, living; Case 6, died seven days after operation (gangrene); Case 7, died two days after operation (peritonitis); Case 8, died five days after operation (gangrene); Case 9, died fourteen days after operation; Case 10, four months after operation, living; Case 11, one and one-half months after operation, well, committed suicide; Case 12, died six days after operation; Case 13, died two days after operation; Case 14, died

two days after operation (peritonitis); Case 15, died nine months after operation; Case 16, five years after operation, living; Case 17, two years after operation, living; Case 18, died day of operation; Case 19, one and one-half years after operation, living; Case 20, four months after operation, living; Case 21, five months after operation, living; Case 22, three months after operation, living.

Goullioud. *Bull. Soc. de chir. de Lyon*, 1899-1900, iii, 85-91; seven months after second operation, living.

Schmid. *Med. Cor.-Bl. d. Württemb. Aerzt. Ver.*, Stuttg., 1903, lxxiii, 186; died after six and one-half months.

Mikulicz. *Arch. f. klin. Chir.*, Berl., 1903, lxi, 28-47; *Radical operation*: Case 1, died after five and one-half years; Case 2, died after fourteen and one-third months; Case 3, died after thirteen months; Case 4, died after eleven months; Case 5, died after eight months; Case 6, died after seven months; Case 7, died after six months; Case 8, died after five and one-half months; Case 9, died after three and one-half months; Case 10, living after thirteen months, has recurrence; Case 11, nine and one-fourth years after operation, living; Case 12, living after five and three-fourth years; Case 13, five and three-fourths years after operation, living; Case 14, living after four and one-fourth years; Case 15, four years after operation, living; Case 16, living after two years; Case 17, one and one-half years after operation, living; Case 18, living after one and one-fourth years; Case 19, one-fourth year after operating, living; Case 20, living after one-fourth year.

Patel and Cavaillon. *Arch. g'n. de méd.*, Paris, 1903, ii, 2241; six months, living.

Sato. *Wien klin. Wchnschr.*, 1903, xvi, 1308; four months, living.

Bergalonne. *Rev. med. de la Suisse*, Rom., Geneve, 1908, xxviii, 532; four months after operation, living.

Gage. *Boston Med. and Surg. Jour.*, 1903, cxlix, 277; Case 1, died three hours after operation; Case 2, three years after operation, living; Case 3, died two months after operation; Case 4, seven years after operation, living.

Stirling. *Australas. Med. Gaz.*, Sydney, 1903, xxii, 346; five and one-half months, living.

Gibb. *Glasgow Med. Jour.*, 1903, lx, 33; six months after operation, living.

Doebblin. *Deutsche mil. ärztl. Ztschr.*, Berl., 1908, xxxvii, 1025; four months after operation, living.

Sasse. *Deutsche med. Wchnschr.*, Leipz., 1903, xxix, 769; after three years, living, without recurrence.

Guillet. *Bull. et mém. Soc. de chir. de Par.*, 1904, xxx, 1003; eight and one-half months after operation, living.

Quenu. *Bull. et m m. Soc. de chir. de Par.*, 1904, xxx, 919; one year after operation, living.

Sherrill. *Trans. South. Surg. and Gyn. Asso.*, 1903, Phila.,

1904, xvi, 49; Case 1, died eighteen hours after operation; Case 2, two years eight months after operation, living.

Tamsini. *R. Ist. Lomb. d. sc. e lett.*, Milano, 1904, xxxvii, 768; one year eight months after operation, living.

Morton. *Brit. Med. Jour.*, Lond., 1904, ii, 1449; Case 1, died one year, nine months after operation (recurrence); Case 2, five years after operation, living; Case 3, died eighteen months after operation (recurrence); Case 4, four years after operation, living; Case 5, one year after operation, living; Case 6, died one and one-half years after operation (recurrence); Case 7, one year after operation, living.

Tschudy. *Cor.-Bl. f. Schweiz. Aerzte*, Basel, 1905, xxxi, 114, one month, twenty days after operation, living.

Olmsted. *Canad. Jour. Med. Sc.*, Toronto, 1905, xviii, 90; two months after operation, living.

Klein. *Journ. d. Sc. méd. de Lille*, 1905, ii, 81; died twelve days after operation.

Walter. *Nederl. Tydschr. v. Geneesk.*, Amsterd., 1905, xli, 1101; one and one-half years, living.

Steinthal. *Verhandl. d. deutsch. Gesellsch. f. Chir.*, Berl., 1904, xxxiii, 250; two years after operation, living, but has recurrence.

Gauthier. *Lyon Méd.*, 1905, cv, 761; five months after operation, living.

Jaboulay. *Lyon Méd.*, 1905, cv, 725, two and one-half months after operation, living.

Savariaud. *Bull. et mém. Soc. de chir. de Paris*, 1905, xxxi, 872; Case 1, nine months after operation, living; Case 2, died eighteen months after operation.

Kennedy. *Detroit Med. Jour.*, 1905, v, 306; two months after operation, living.

Martinez. *Rev. méd. de Bogota*, 1904-5, xxiv, 325; one year, eight months, living.

Newbolt. *Liverpool Med. Chir. Jour.*, 1905, xxv, 55; Case 1, one year after operation, living; Case 2, one year five months after operation, living.

Pauchet. *Assoc. Franc. de Chir.*, Par., 1905, xviii, 820; Case 1, had recurrence twenty months after operation, died three months later; Case 2, died nineteen days after operation; Case 3, died several months after operation.

Lilienthal. *Ann. Surg.*, Phila., 1906, xliii, 145; four months after operation, living.

Neumann. *Deutsche med. Wchnschr.*, Leipz. u. Berl., 1906, xxxii, 542; Case 1, died two days after operation; Case 2, five and one-half years after operation, living; Case 3, eight months after operation again operated for metastasis in ovary, died three months later; Case 4, seven months after operation, living; Case 5, two years after operation, living; Case 6, one and one-half years after operation, living; Case 7, one and one-half years after operation, living.

Cushing. *Ann. Surg.*, Phila., 1906, xliv, 261, two years after operation, living.

Bazy. *Bull. et mém. Soc. de chir. de Par.*, 1906, xxxii, 1029; one year after operation, living.

Vaughan. *Clinique*, Chicago, 1907, xxviii, 292; Case 1, recurrence six months after operation, died nine months later; Case 2, two and one-half years after operation, living.

Tansini. *Riforma Med.*, Palermo, 1904, xx, 973; seven months after operation, living.

Condon. *Med Herald*, St. Joseph, Me., 1905, xxiv, 556; Case 1, died sixteen days after operation; Case 2, died ten weeks after operation; Case 3, nine months after operation, living; Case 4, died two days after operation.

Newbolt. *Med. Press and Circular*, Lond., 1906, lxxxii, 237; Case 1, thirteen months after operation had recurrence, soon after died; Case 2, one year four months after operation, living.

Savariaud. *Bull. et mém. Soc. de Chir. de Par.*, 1909, xxxv, 758; two years after operation, living.

Westby. *Liverpool Med. Chir. Jour.*, 1885, v, 470; died four months after operation.

336 WEST BERRY STREET.

TORSION OF THE GREAT OMENTUM.¹

BY

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A REPORT of the following case of torsion of the great omentum seems warranted, not only because of its being an addition to the few cases already noted in the literature, but also by reason of its apparently unusual consequences.

A. H., age thirty-four, American, of German parentage, by occupation a fisherman, a large, rather fleshy and very muscular man, weighing perhaps 210 or 220 pounds, was referred to me in January 1910 by Dr. Montgomery of Port Clinton, Ohio. The patient gave a history of having had a number of attacks during the preceding few weeks, of very severe abdominal pain, so severe, indeed, that he greatly dreaded their recurrence and was eagerly willing to submit to any operation that gave him promise of relief. Vomiting had sometimes accompanied the attacks, and the bowels would move freely and with little difficulty but with no relief of the pain. Morphine in large doses would alone control it. The patient had had since a child a left-sided inguinal hernia, with an undescended testicle on that side, and it was

¹ Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

to this condition his pain was attributed by Dr. Montgomery. At no time had the intestine been incarcerated.

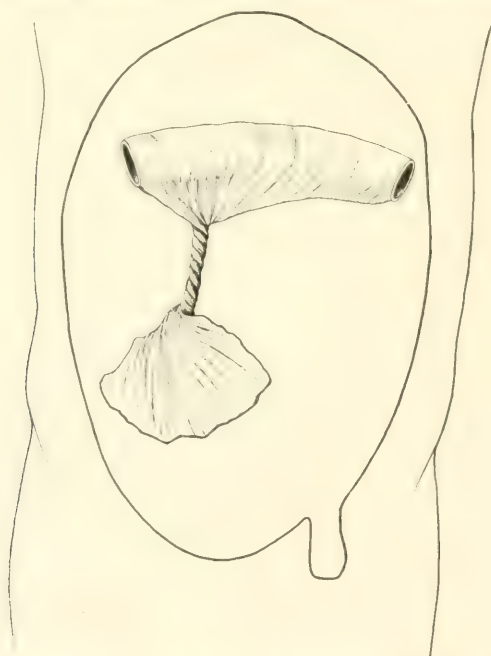
It was for repair of the hernia and operation for the undescended testicle that the patient was sent to me. He referred his pain to the epigastric and umbilical spaces, and described it as being very diffuse over these regions, but at the time of my examination he was free from it, though said he dreaded exceedingly its recurrence and that it was liable to come on at any time. The taking of food, as nearly as I could ascertain, did not determine the onset of an attack, though theoretically it should have done so. Percussion and palpation of the abdominal wall gave no information as to the origin of the pain he described, no doubt on account of the thick fat and strong and rigid muscles, and the diagnosis made by Dr. Montgomery, that it was due in some way to the undescended testicle in conjunction with a possible recurrent epiplocele, in the absence of anything else to which it might be attributed, seemed most probably correct.

I operated January 28, 1910. The hernial sac was readily loosened, and attached to it at the entrance to the internal ring the testicle was found, nearly normal in size, but no portion of omentum came into view nor came within reach of the finger. With some trouble the testicle was loosened from its attachments and brought into the scrotum and the inguinal canal closed. During the following night his nurse called me up stating the patient was suffering intensely, the pain being so severe that he seemed unable to endure it. I ordered a rather large dose of aspirin, and this I think gave him some relief. I saw him early in the morning and, though his pulse and temperature at this time were about normal, his features seemed pinched as though suffering greatly, and he was exceedingly restless. He had been a man of somewhat intemperate habits, though he assured me that for some time he had drunk nothing at all. I now erroneously attributed his restlessness to alcoholism and prescribed accordingly.

I saw him again toward evening and found his pulse had now increased to more than a hundred, with all the severe symptoms of the morning intensified. He seemed a very sick man, was restless, and complained of intolerable pain which was most accentuated about the umbilicus, and was perspiring profusely. His abdomen seemed slightly tympanitic, and I ordered a turpentine enema after which his bowels moved freely, but with no betterment of the symptoms. Morphine was now freely

administered and, though his pain was somewhat controlled, his symptoms steadily became worse and, at the suggestion of one of my assistants, I ordered the stomach irrigated whereupon, to the surprise of us all, an enormous quantity of blood gushed out through the tube as soon as it was passed.

The man now vomited for the first time since the operation, and the vomitus was composed of a still larger quantity of blood. The severe constitutional symptoms were now accounted for. He was suffering, as we supposed, from a gastric hemorrhage; but the pain was yet a mystery. The easy movement of the bowels and the absence to this time of vomiting excluded



intestinal obstruction, and there was no evidence of peritonitis. The patient's condition steadily became worse in spite of all we could do, with no cessation of gastric hemorrhage, and he died within fifty hours from the time of the operation.

Postmortem two hours after death revealed the liver, kidneys, and pancreas apparently normal, but the stomach and transverse colon were filled to distention with blood. A small partially healed gastric ulcer was found near the pylorus, but gave no evidence of having been the seat of the hemorrhage. The great omentum lay upon the right side of the abdominal cavity at

a very considerable distance from the repaired hernia. It was not adherent at any point, but was twisted as closely as possible to the transverse colon, the twisted portion being about the size of a finger.

It did not occur to me to count the number of rotations the omentum had made upon itself until I had partly untwisted it, but from this time on I counted five, and I judge there had been at least five more, making ten in all. The bloodvessels between the twist and colon, though very short, were enormously distended as were the gastrocolic vessels. The omentum below the twist was large in size and was almost entirely gangrenous.

Death had occurred primarily from the omental twist, but directly from the gastric and colonic hemorrhage. I am convinced the small gastric ulcer referred to above was not responsible for the hemorrhage at all.

In a somewhat cursory review of the cases recorded in the literature, I have found none where hemorrhage was observed as in this instance. In consideration of the phenomena of this case, two or three pertinent queries arise, which can probably be answered only by conjecture. What was there about the operation that would determine, just following it, the increased and fatal tightness of the twist? Why did it not occur at an earlier or later date? A plausible answer may be found.

When we consider the multiple duties of the omentum and remember that one of them is to make use of its powers of migration from one part of the abdomen to another for the purpose of protection at points of trauma and inflammation, could it not well be that, in its effort to reach the point of the operation on the opposite side of the abdomen, the fatal twist had occurred? Again, why should a fatal or, in fact, any hemorrhage occur as a result of such twist? If we grant, as I think we must, that the hemorrhage was a result of the twist in this case, again a plausible answer would be that it was capillary and a natural result of the enormous overdistention of the omental bloodvessels, the blood demanding an exit and finding it into the stomach and colon?

With the present knowledge we possess of the diagnosis of torsion of the great omentum, would or could a diagnosis have been made prior to operation? I believe not. Had this abdomen been reopened at the onset of the severe symptoms and the omentum amputated at the point of twist (for untwisting would have been impracticable) would there have been a likeli-

hood of the cessation of the gastric and colonic hemorrhage, or would the removal of so large a portion of the omentum have been followed by recovery? I believe that both of these queries may be answered in the negative. I see no reason why amputation would have controlled the hemorrhage, and when we consider the importance from a physiological stand-point of the great omentum I am sure Fuller(5) is correct when he says, "Its uses cannot with safety be curtailed or compromised."

The etiology of torsion of the omentum has not as yet been entirely cleared up, though in most instances it seems sufficiently apparent. Baldwin(2) says, "There seems to be no question as to the causative connection between the omental mass and hernia" and that "congenital malformation of the omentum may be a factor."

Richardson(11) says, "The conditions necessary for the production of an omental torsion are, therefore, the formation of a mass of matted omentum at its free extremity or the formation of a second fixed point of adhesion of the free end to some other structures."

Griffith(4) mentions, "The attachment of the great omentum to the primary peritoneum over the right kidney, so forming a point of adhesion and torsion."

W. H. Luckett(7) says, "The structure of the omentum has for its chief framework, its vessels, long thin arteries that come off, for the most part, from the gastroepiploic arteries at the great curvature of the stomach, running downward and then upward to anastomose with the arteries of the colon. Enlarged full veins have been characteristic of the specimens of torsion of the omentum. Now these veins increase in size and length more rapidly in inflammation than the arteries, and would have a tendency to wrap around the latter and carry the loose mesothelium and so may perhaps be the chief factor in producing torsion." In the case reported no doubt the hernia was the original cause of the torsion, though no evidence to indicate this was found at the postmortem.

The paucity of diagnostic symptoms and signs we possess pointing to this condition is sufficiently apparent when we note that, of the cases reported, now more than seventy, the diagnosis was made but once prior to operation.(1) What we have are about as follows: The presence in most instances(1) (90 per cent.) of an abdominal hernia, including inguinal, femoral, ventral, and umbilical, though most often a left-sided inguinal hernia.

The fact of there being an undescended testicle should also be considered. The patients are generally in middle life, most frequently a male, in the proportion of 17 to 36(1). The attack is first noticed by an onset of severe abdominal pain, not infrequently in the right hypochondriac space, and often supposed to be appendicitis, though the pulse and temperature do not rise so rapidly as in severe attacks of this disease, while tenderness and dullness cover a much wider area. Vomiting occurs in but 50 per cent. of cases, constipation is rare, though of the cases reported in five the bowels failed to act. Distention of the abdomen is not usually noticed, but occasionally does happen. The symptoms are sometimes taken for those of intestinal obstruction, but should not be confounded with them, for the bowels generally act with little difficulty and there is usually lack of severe vomiting. The condition may be suspected when, after movement of the bowels, under such circumstances, there is no cessation of the pain.

The tumor is sometimes felt with its surface irregular and its borders not well defined, and sometimes seems to be continuous upward from a hernial opening. Ascites has been noted. In the light of the case here reported, gastric and colonic hemorrhage in conjunction with severe abdominal pain, not accounted for, must be considered a diagnostic sign.

The prognosis when the case is left to itself must depend largely on the amount of omentum involved, though other factors may obviously enter into it, and I know as yet of no estimate of the death rate having been made in this class. The prognosis for cases operated is as yet not very accurately determined, but the death rate has been estimated(1) to be about 13 per cent.—a death rate sufficiently high to warrant a more careful study of the diagnosis and treatment of the condition than as yet has been given it; and when diagnosis prior to operation has been made possible, I am convinced that the observation made by Richardson(11) is correct, namely, that "torsion of the omentum will be found to be more common than is now supposed"; and I may add that it is not improbable that many of the obscure abdominal pains, now often attributed to other conditions, are caused by it.

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 10. G. Seefisch. *Deutsche medizinische Wochenschrift*, Sept., 1909.
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- 1613 JEFFERSON STREET.

SECONDARY REPAIR OF COMPLETE PERINEAL LACERATION; ITS TECHNIC AND RESULTS.¹

BY

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Newark, N. J.

(With six illustrations.)

It has been my experience to learn that operations for complete lacerations of the perineum are not successful in a goodly proportion of cases. A number of my friends who did me the honor to witness the operation at my hands have told me of the many failures which they know of. A perusal of my work shows a remarkable and uniform success. My first operation after the method to be detailed was done on February 1, 1891. But one case was noted as improved on her dismissal since retention power was doubtful. The patient has since been seen and perfect retention power was the ultimate result.

The case of longest standing was a little over twenty years. The operation in her case was done fourteen years ago at the age of sixty years and she remains perfectly well to-day. The case of the shortest standing was five months. The operation should not be done earlier, and never until all tissue is soft and pliable. Altogether there were fifty-six cases. Twenty-six cases were complicated by other operations. Thus there were two Adams-Alexander, three Gilliams, and one for vesicovaginal fistula operation.

I am not telling you this to boast but to inform you of the

¹ Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

excellent results attainable. Many operations for the relief of this distressing injury has been advised since Dieffenbach, the great German surgeon of nearly one hundred years ago, first described one. It is to Emmet that we owe an understanding of the cardinal principles leading to success—namely, the location and search of the sphincter muscle and its neat approximation. Most operations have the fault of being complicated either by the removal of normal tissue, both skin and mucous membrane, or the burial of unabsorbable or slowly absorbable suture material.

Tait in 1881 first described a crude operation which was

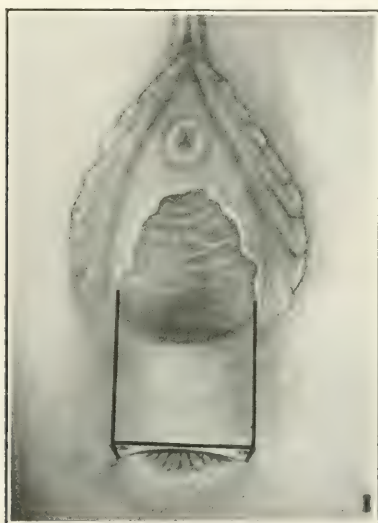


FIG. 1..

successful in a fair proportion of cases. Sanger described Tait's operation in 1887, and in a personal communication at the time of my visit to his clinic in 1894 I learned that a large majority of his cases resulted in cure, though the total number barely exceeded a dozen. Sanger made some important and valuable additions to the Tait operation. It was this Tait-Sanger operation which appealed to me mostly and which I have done for nineteen years with such improvements as to attain the result already spoken of. It is an operation which I delight to do. There is no plastic operation which must be done with more accuracy and results in greater relief to a patient, unless it be a vesicovaginal fistula closure.

The operation is essentially a flap-splitting operation and can be divided into six distinct steps:

- | | |
|----------------------------------|------------------|
| 1. The incisions, | Fig. 1. |
| 2. The flap splitting, | Fig. 1, 2 and 3. |
| 3. The suture of the rectum, | Fig. 4. |
| 4. The suture of the perineum, } | Fig. 5. |
| 5. The suture of the vagina, } | |
| 6. Twisting of perineal sutures, | Fig. 6. |

It will hardly be necessary to say that careful attention to the bowels and a diet as free from residue as possible for two days

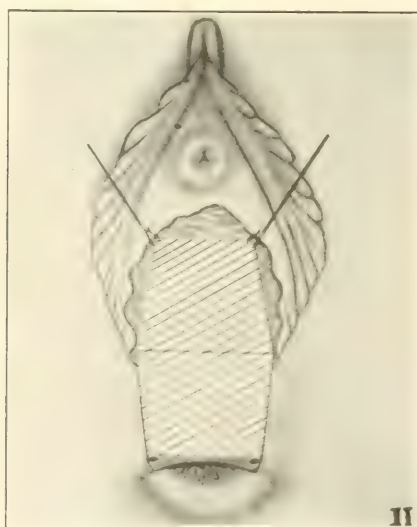


FIG. 2.

before the operation, thorough aseptic conditions just before, during, and after the operation as well as a most careful nursing are essential to success. May I say that I never use a sponge or wipe during the operation for fear of rubbing septic discharges from the rectum into the wound, but keep the wound clear of blood by constant irrigation! May I also say that the finger never touches wounded tissue nor the rectum! All handling of tissue must be done by sterile instruments. If perchance the rectal mucous membrane is touched with tissue forceps they are immediately discarded for sterile ones.

The Incision.—This is made by following distinct landmarks as shown in the drawing. The incision takes on an H-shape with

the lower upright bars very short and slightly curved inward. The lateral incision begins at the location of the most posterior caruncle remaining from the hymen. If perchance they are entirely obliterated the incision should begin a little to the outward and behind the orifice of Bartholin's gland. It is continued downward and backward and just outside of and behind the dimple which indicates the torn sphincter.

The cross-bar of the H is carried exactly across at the junction mucous membrane of rectum and vagina and reaches each upright bar just anterior to the dimple of the retracted sphincter.

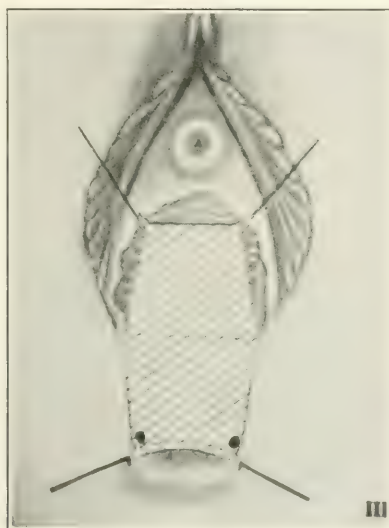


FIG. 3.

A wound of the mucous membrane of the rectum at any point is avoided. All this can best be done with a very sharp, short-bladed knife when the tissue is put on the stretch by assistants on each side, and that in a few moments of time.

The Flap Splitting.—This is now conducted by grasping the corner of one upper angle and with scissors trimming up as high on the vagina as is indicated by the retracted levator ani. The other upper side is treated likewise. Now the very important denudation of the sphincter ends is accomplished by grasping the lower corner of each side and cutting downward and backward, making a comparatively thin flap. I am always anxious to have free bleeding, as it insures good union. No tissue is

removed unless it looks damaged from great thinness of the flap. This commonly occurs at the edge of the wound. The result of all this is a large wound with an irregular square outline.

The Third Step.—This consists in suture of the rectal mucous membrane, and for it the very finest plain catgut on a fine slightly curved needle should be used. The suture begins exactly in the middle of the posterior wound and never touches the mucous membrane of the rectum. It is entirely buried in the raw surface, each end of the suture being threaded into the

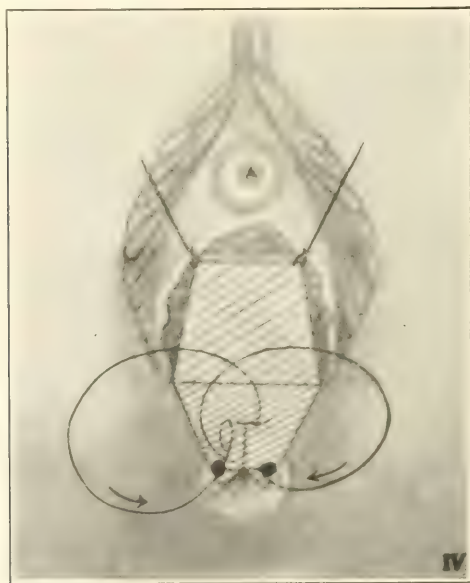


FIG. 4.

needle with which a double line of suture is made. The last stitch of each side comes out in the skin just inside and behind the sphincter and is tied outside. Every stitch is taken very superficially. I use a very fine suture that it may absorb in three or four days, which very effectually keeps any rectal discharges from the wound.

The Suture of the Perineum.—This constitutes the next step, for which I prefer to use a very pliable silver wire made of as pure silver as can be obtained, which should be well annealed. The suture may be taken by a curved round needle or, as I prefer, a Crofford needle. They should all enter the skin just at

the border of the wound so that no skin will be drawn into the wound. The first suture is passed just within the curve of the sphincter; the second, through the sphincter itself; and the third just anterior to the sphincter. Each suture takes a sweeping curve so that the tissue will not be puckered, but rather spread out when the sutures are tightened. The sutures are now continued in the same way, taking wide sweeps up as high as the beginning of the upright bars of the incision H. The sutures will rarely appear in the wound.

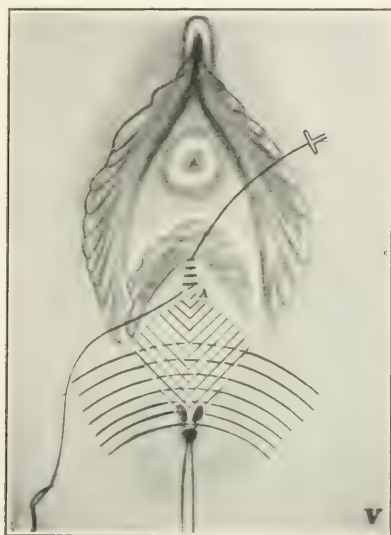


FIG. 5.

The Fifth Step.—The fifth step of the operation consists in suturing the vagina. A fair-sized plain catgut should be used. The sutures must start at the middle of the anterior part of the flap formed by the anterior incision of the cross-bar of the H. It should be a continuous suture. This will insure an elevation of this flap into the vagina. This suture is continued for the present to A in figure 5. Now the silver wire is twisted down with the greatest care, shouldering the strands and holding them horizontally with a tenaculum.

Great exactness in the coaptation of the wound can and should be secured, and with the least tension. The twisting of the suture begins at the new anal orifice and care is exercised to see that the ends of the sphincter come together without

tension and without drawing a flap of the skin between them. The suture of the vagina is now continued from the new fourchet down the perineum and tied an inch above the new anal orifice.

The silver wires are cut to about 3 inches in length and held together by a piece of fine rubber tubing. The operation is now finished. The sutures are cut on the ninth day and removed the next day. I have gone to some length in describing the operation. It is easier than the lengthy description makes it appear and consumes shorter time.

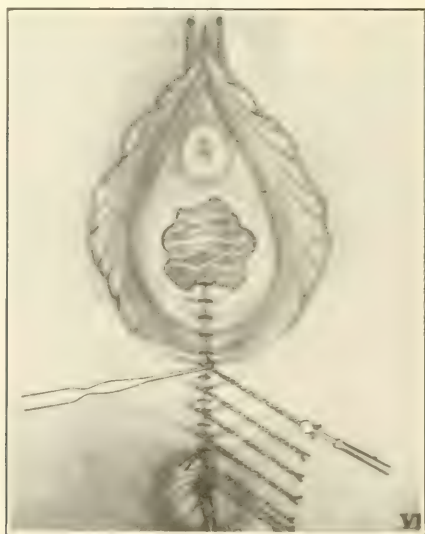


FIG. 6.

My talk would not be finished should I neglect to say something about the after-treatment. A good nurse is quite essential. The bowels should be moved by a saline in forty-eight hours and the movements preceded by a sweet-oil injection. During the act of defecation I always direct the nurse to turn the patient on her left side and make pressure toward the new perineum with her left hand while the right hand carefully opens the anus. After the first movement the bowels are moved every second day by any means best suiting the patient. Thorough movements should be insisted upon. Urination should be normal and usually is so. I would rather have the patient sit up on a

commode than be catheterized. The diet, during the first week, should consist of such food as will leave little residue.

The patient gets up on the eighteenth day and is discharged as soon as she feels able to go. If the operation is thoroughly successful she should be well aware of her retention power about the time the sutures are removed, or immediately afterward. We instruct the patient to tell us when she is first aware of her ability to retain gas. This is our criterion.

1002 BROAD STREET.

CESAREAN SECTION, THE PREGNANT UTERUS BEING WITHIN AN UMBILICAL HERNIA.¹

BY

J. H. CARSTENS, M. D.,

Detroit, Mich.

(With one illustration.)

THIS being a very rare condition, I deemed a report of the case of sufficient interest to present it before this body. It is as follows: Mrs. M. M., age forty, mother of two children. Had been a widow for some years. Married again for a year, and came to consult me about her condition. On examination I found the following state of affairs: She was an immensely large woman, weighing 290 pounds. She had a pendulous abdomen, hanging nearly down to her knees. There was a large umbilical hernia through which the uterus projected, and she was at the end of pregnancy. On vaginal examination I could not reach the cervix. The vagina seemed to be a long, thin tube, and on account of the adipose tissue it was impossible to make out anything, except that she was pregnant. The uterus was partly, or rather the most of it, in the umbilical hernial sac.

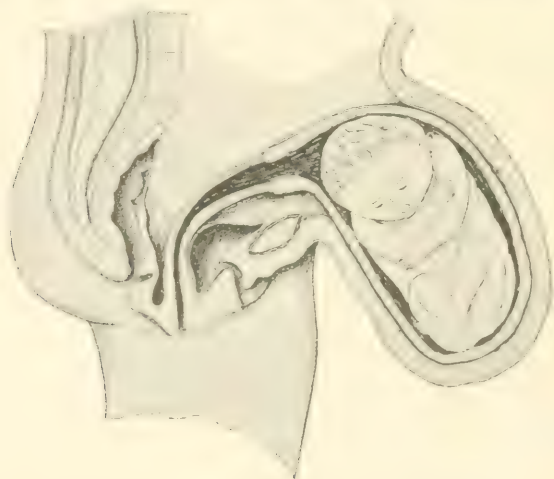
She was anxious about the outcome of delivery, hence I told her to go to Harper Hospital when she was seized with pains and we would see what could be done after she was placed under an anesthetic. I heard nothing of her for a few weeks, when one day I was called to the Woman's Hospital where she had been sent by some of her friends. She insisted that I should look after her and expressed a desire to go to Harper hospital, so I sent her there in the ambulance.

Fetal life had ceased for twenty-four hours, as far as we could make out, hence I prepared her for operation the next morning,

¹Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

as she had had some labor pains, and, according to her estimate, it was now past the time for labor to set in.

The next morning, December 19, 1908, we operated, there being nothing to do except a Cesarean section. After getting her under an anesthetic and having the pendulous abdomen lifted in place, as near as could be done, I made an incision from the umbilicus downward for 6 inches. The abdominal wall was very thin and the muscular, cellular, and fibrous tissues were so stretched that I immediately reached the uterus. Passing my hand around it, I found that the whole uterus, up to the internal os, was in this hernial sac, which made it evident that it would



have been impossible to deliver her by the natural passage. I made an opening into the uterus and quickly delivered the dead fetus. I then sewed the incision of the uterus with a running suture of No. 3 catgut, through peritoneum and muscle up to the mucous membrane, but not including the latter. I amplified this with a second suture more superficial, to accurately adjust and turn in the peritoneal covering. I then turned attention to the umbilical hernia, overlapping it, flap-splitting, and the like, and made it as mechanically perfect as I could; but on account of the immense stretching, absorption of muscle and infiltration with fat, it was impossible to do a very good piece of surgery. However, the woman made a rapid, complete recovery, with still a projection at the umbilicus and the pendulous abdomen, retaining her 290 pounds in weight.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of November 8, 1910.

The President, J. LEE MORRILL, M. D., in the Chair.

DR. HERMAN GRAD read a paper and reported a case of

APICAL PREGNANCY.*

DR. W. H. W. KNIPE read a paper on

ABNORMAL PLACENTAL IMPLANTATION.†

DISCUSSION.

DR. EDWIN BRADFORD CRAGIN.—While Dr. Grad was reading his paper two points impressed themselves upon me:

1. The importance of locating the insertion of the round ligaments into the cornua of the uterus as determining whether the gestation sac is tubal or uterine. I am sorry Dr. Grad did not indicate the round ligaments in his drawings, for, while they do not always determine whether the gestation is intrauterine or interstitial, their point of insertion on the affected side does indicate whether the gestation is intra- or extrauterine.

2. In regard to the use of the term "apical pregnancy," it seems to me that there is some objection. While the cavity of the uterus is looked upon as triangular, the line joining the entrances of the Fallopian tubes is usually regarded as the base of the triangle and the internal os as the apex. It would seem to me that the term "cornual pregnancy," with which we are all more or less familiar, would be sufficiently descriptive.

DR. BROADHEAD.—Dr. Grad is to be congratulated upon the excellence of his paper. He has brought out very clearly the reason why in so many cases where curettage has been skillfully performed, pregnancy proceeds normally, the ovum being so well up in one horn that the curet fails to reach it.

Dr. Knipe mentioned the use of the Champetier de Ribes bag in the treatment of placenta previa. There is no question in my mind but that the best results can be obtained by its use in many cases where the bleeding is over-profuse. Not only is labor induced, but the cervix is mechanically dilated and the hemorrhage checked. When the os has been well dilated, version may be performed. Dr. Knipe advised strongly against rapid extraction of the child in placenta previa, and we feel that if this advice were carried out religiously, many women would be saved each year. I can recall a case in which, after bringing down the foot, the operator discovered that the child was strad-

*See original article, page 54.

†See original article, page 1.

dling the cord. In order to save the child, a rapid extraction was done, the mother losing her life from rupture of the uterus. Cesarean section is rarely indicated for placenta previa. In a recent experience in private work, however, the indications for section seemed clear, in the interest of mother and child. A primipara, thirty-six years of age, advanced to full term, with a slight discharge of blood each day for the week preceding confinement. There was finally a gush of several ounces of blood, after which the diagnosis of central placenta previa was made. There had been practically no hemorrhage, the os admitted barely two fingers, and the patient was in excellent condition with a full-term child. I explained that the child would almost certainly be lost by any other procedure than Cesarean section, but the family decided against section. The hand was carried through the placenta and the foot seized and extracted. Then we waited for dilation of the cervix, after which a dead fetus was extracted, the woman making a perfect recovery. The blood loss throughout pregnancy and labor was very small, probably 16 to 20 ounces. In this case, Cesarean section would probably have given brilliant results.

DR. MARX.—Neither the splendid paper of Dr. Grad nor the clinical observations during a laparotomy would lead me to believe that pregnancy in one horn of a normal uterus ever exists as an entity. I have seen quite a few of these cases simulating an ectopic, but were all cleared up under anesthesia, for the simulating ectopic was nothing but a strong flexion of the fundus to the right or left, either from weight of the fundus, or pathologically flexed by tubo-ovarian disease causing adhesions between these organs. These same clinical phenomena are present in the cases of incarceration of a retroflexed or retroverted pregnant uterus; *i.e.*, pain, hemorrhage, and severe abdominal symptoms. We still maintain that as a true condition of pregnancy in one horn of a normal uterus it has never been proven. That it in all probability is 1, either a flexed fundus causing a sacculatation of that portion, (this same sacculatation is seen after labor when, from muscular weakness and weight the fundus flops acutely posterior, and forms a reservoir for retained lochea, with all the attendant symptoms); or 2, fixed latero flexion of the uterus; 3, partial interstitial pregnancy with tendency to intra-uterine growth, ending most frequently by the ovum dropping into the uterus and aborting.

In reference to placenta previa, I have written much on this subject and was able to report sixty cases of placenta preva, including six complete ones with a nil mortality rate. I was fortunate and had faith in pure manual dilatation of the lower uterine zone. Then two sudden deaths occurred and I began to hesitate and to such an extent that I am much less radical in my measure. Where the bleeding is minimal I simply rupture the membranes, which is a valuable measure in checking the flow. Where more profuse and the os unprepared very firm lower

uterine and vaginal tamponade is done to prepare the way for a manual dilatation. Where the fetus is dead or immature a Braxton Hicks version and tamponade. Dührssen's deep incisions I tried but found the bleeding from the cut area difficult to check, otherwise the procedure is of value. Vaginal hysterotomy is a good measure, but the repairing is a serious matter, the passing of the upper stitch being very trying. In view of the tendency to postpartum hemorrhage all these cases are thoroughly tamponed by a uterovaginal tamponade.

DR. WALDO.—I was fortunate at one time to attend a patient who ultimately gave birth to five children. The first two were born without difficulty. With the third child I found the patient with the fetus in the left horn of the uterus. I examined her several times very carefully and thinking it might be possible she had a case of extrauterine pregnancy I finally took her to the late Dr. Hanks and told him of my belief. He confirmed the diagnosis of a uterine pregnancy and so she was not operated. During the latter part of the third month she had some uterine pain that lasted three or four days and then ceased, and I subsequently delivered her of a perfectly healthy child. She has since given birth to two male children.

DR. GRAD.—I am glad Dr. Cragin mentioned the round ligament. When the abdomen is opened the round ligament is a very important diagnostic point in the differentiation of the true conditions, but as my paper does not deal with that subject I did not consider it.

In regard to the word "apex" I think it applies as much to one angle of the triangle as the other, as much to the angle at the Fallopian tubes as the inner os. The term cornual pregnancy is applied to pregnancies in the horn of abnormal uteri.

Dr. Marx does not believe in the existence of pregnancies in the horn of the uterus, but thinks that the uterus sacculates. In the case here reported there was a big cavity at the horn of the uterus. I should say it was a pregnancy in the horn and not a sacculation. I am very glad to have heard Dr. Waldo express his opinion on the subject, and that he has met with a case of pregnancy in the horn of a normal uterus.

DR. KNIPE.—I desire to present a specimen of

UNRUPTURED ECTOPIC GESTATION

in the left Fallopian tube showing a fetus of about two months, although the menstrual history would indicate an age of three months; the specimen is well preserved and shows placental formation in the ampulla of the tube, there is hemorrhage into the lumen and also in the tube wall; the diagnosis was made before operation. There is nothing of especial importance in history: patient twenty-six years of age; married; one miscarriage six years ago; no pelvic trouble except occasional leucorrhea, no disturbance of micturition at any time, no menstrual irregularity except absence for last three months.

Four days previous to operation patient bled profusely and she thought she was miscarrying; before this for a period of two months there had been slight spotting. The pain was very slight on left side even to the last. The leukocyte count was 7,600, with polymorphonuclears of 60 per cent., small mononuclears 25 per cent., large mononuclears 12 per cent, basophils 3 per cent.

At operation no free blood was found in peritoneal cavity.

TRANSACTIONS OF THE SOCIETY OF THE ALUMNI OF THE SLOANE MATERNITY HOSPITAL.

Meeting of October 28, 1910.

The President, GEORGE H. RYDER, M.D., in the chair.

DR. W. M. HARTSHORN, reported a case of

CONGENITAL HYDROCEPHALUS

and also presented the body of the infant. The mother was a primipara, age twenty-three, domestic by occupation. She was delivered in the Nursery and Child's Hospital in October, 1909. The personal and family history were negative. Pelvic measurements were normal and the fetus was in the R. O. A. position with the fetal heart in the right upper quadrant, 120 and loud. The first stage of labor occupied about twelve hours, but during the second stage the pains were short and frequent and the head engaged only slightly. This stage lasted twenty-four hours, the patient and child being apparently in good condition. A previous examination disclosed the presence of a soft mass extending into the cervix which was thought at the time to be a breech, but upon later examination the sutures could be felt with the fontanels widely distended. Abdominal examination showed a distinct bulging mass above the symphysis which was moderately tense and resembled a distended bladder. The fetal heart-sounds were quite strong with the point of maximum intensity in the right upper quadrant. During the second stage the pains were fairly good for the first six hours, but after that they became less intense and the patient went to sleep. In the morning the pains came on again, but were slight and ineffectual, the head remaining only slightly engaged. Quinin was given without much result. Although the head was believed to be large, yet it seemed possible to extract it by forceps as the patient was becoming exhausted and the cervix was practically fully dilated. The solid blades were first introduced, but as they slipped almost immediately they were discarded and the axis-traction instrument applied. After several attempts with the latter it was found that a satisfactory application was im-

possible. A craniotomy was, therefore, decided upon and as soon as the head was perforated, a sudden discharge of about a quart of foul-smelling fluid resulted. Delivery was then easily complicated by means of a cranioclast. The duration of the entire labor was thirty-six hours and twenty minutes. The child was a female weighing eight pounds and eight ounces. Examination of the cranial cavity showed the cerebrum apparently thinned out and all that remained of the brain substance was a small cerebellum. The puerperium was uneventful and a rise of temperature of the third day of 103° disappeared after the administration of a vaginal douche and elevation of the head of the bed.

DISCUSSION.

DR. E. B. CRAGIN referred to the difficulty of making the diagnosis in certain cases of hydrocephalus. This would seem to be relatively easy in the presence of large fontanels and wide sutures, where the head did not descend, notwithstanding strong pains, and normal pelvic measurements. If certain of these features were absent, however, the diagnosis was not always so easy, a fact which had been impressed upon him within the past month. In cases where there was lack of descent and a broad, firm parietal bone presented, the question resolved itself into, whether this lack of descent was due to the relation between the lumbar spine and the sacrum, as so frequently happens, or whether it was due to hydrocephalus. Dr. Cragin referred to a case of this kind which came under his observation at the Sloane recently. In this instance the liquor amnii had drained away, the head remained high, no sutures or fontanels could be felt, and the pelvis was of normal size. The right parietal bone presented. The uterus was well contracted and Dr. Cragin felt perfectly free to confess that all he could make out was a large child which did not descend in spite of good uterine contractions. A Cesarean operation was believed to be indicated and was accordingly performed. A living hydrocephalic child was secured which still lived at the time of the report. The patient's convalescence was probably as normal as after a prolonged attempt with the forceps, followed by perforation. Although it was unfortunate that the diagnosis of hydrocephalus had not been made, the error was excusable as the usual symptoms and signs were absent and as it was desirable to avoid vaginal examinations because a Cesarean operation was contemplated. In this instance only the parietal bone directly over the cervical canal could be felt and there was nothing else on which to base the diagnosis.

DR. F. A. DORMAN referred to a case which he had seen in consultation several years ago. The patient was in the second stage of labor and the fontanels could be felt together with fairly wide sutures, but they did not seem sufficiently open to suggest hydrocephalus. Forceps were applied, but when the attempt at traction was made, the instrument invariably slipped,

and it was impossible to bring the head down. As it seemed impossible to deliver by forceps a version was done but with difficulty. The baby presented a not excessive degree of hydrocephalus, but the fluid was not under any great tension, otherwise the condition would have suggested itself sooner. In this case it would have been advisable to have done a perforation.

DR. J. D. VOORHEES had seen a number of cases of hydrocephalus at the Sloane Hospital where the same difficulty in making a diagnosis was experienced as mentioned by Dr. Hartshorn in his report. The soft enlarged head was mistaken for the breech of the child. It seemed to Dr. Voorhees that the only way to be sure of the diagnosis in doubtful cases was to introduce the entire hand into the uterus. The large fontanel and wide open sutures of a hydrocephalic head could then be readily determined and the diagnosis made absolute. As suggested by Dr. Cragin this procedure was dangerous if an abdominal operation was contemplated. The method was warranted, however, if there was a suspicion of hydrocephalus.

DR. R. M. BROWN reported a case of a

RUPTURE OF THE UTERUS

which occurred in his service in the out-door department of the New York Infant Asylum. The patient was a colored woman, thirty-five years of age and the present was her eighth pregnancy. The patient had been sterile for six years after marriage and then an operation was done, probably dilatation and curettage. Since then she had six full-term children and one miscarriage about the fourth month. The labors were all easy, and the puerperia comparatively normal. Nothing noteworthy had occurred during the last pregnancy and the examination showed a fetus in the L. O. A. position. Pelvic measurements were normal and the outlet was large. The date of her expected confinement was September 22, 1910, but nothing was heard from the patient until about 7 P. M. on October 14. One of the students on duty was sent out on the case and during the first stage which began at 5 P. M. the pains came on regularly every ten minutes. At 7.30 P. M. the cervix was two fingers dilated, the fetal heart 140, regular, and in the left lower quadrant, the membranes were intact and the bladder and rectum empty. The dilatation was complete at 10.55 P. M. and the membranes were ruptured artificially. Labor progressed apparently in a satisfactory manner with regular pains from two to three minutes until midnight. Then the caput came into view during a hard pain followed by an exclamation from the patient that she thought there was a second baby and upon examination a mass was found in the left upper quadrant of the abdomen. The student could feel the legs and buttocks of the child directly under the abdominal wall and immediately sent to the hospital for help. Owing to misunderstanding and delay on the part of the messenger it was an hour and a half before the staff doctor from the hospital

got there. He found the woman in collapse with symptoms of severe hemorrhage. Examination showed the head almost at the outlet and seeing that the patient was on the point of dying and having no forceps on hand, he quickly inserted his hand into the uterus, passed through the rupture on the anterior surface, and succeeded in doing a version. The child was readily extracted, weighed 8 1/2 pounds, and was dead. The patient went into collapse and died just before Dr. Brown arrived on the case. The rupture was through the anterior surface of the uterus and extended slightly higher on the left than on the right side. The case was noteworthy, because of the comparatively short and easy labor and the absence of any obstruction to delivery. No autopsy was permitted and the ruptured uterus could not therefore be studied.

DR. A. J. GILMOUR reported a case of

CONGENITAL CAVERNOUS ANGIOMA OF THE NECK

of which the accompanying photograph was taken three days after birth. The tumor was situated in the middle of the back



Congenital cavernous angioma.

of the neck at its junction with the shoulders, just within the middle of the base line of a triangular area of light red color. The tumor itself was pedunculated and about 1 inch in diameter. At the end of three weeks the growth had slightly increased in size and the light pink color was replaced by a dark purple. Operation was deferred at the time but when the patient was

visited about ten months later it was learned that the growth had been removed when the baby was two and one-half months old, evidently by excision, as a distinct vertical scar remained over its former site. The child was healthy and robust.

The paper of the evening was read by Dr. R. W. LOBENSTINE, entitled,

FIBROMYOMATA OF THE UTERUS, COMPLICATING PREGNANCY,
LABOR, AND THE PUERPERIUM, BASED ON A STUDY
OF 100 CASES AT THE NEW YORK LYING-IN
HOSPITAL.*

DISCUSSION.

Dr. E. B. CRAGIN.—As regards the histological changes which occur in fibroids during pregnancy, it seemed to him that the process differed with the character of the tumor. The less fibroid tissue these fibromyomata contained the greater the changes which occurred. That is, if the tumor was largely myomatous the increase in size would be relatively rapid, while if it was mostly fibroid the change would be relatively little and slow. Again, the more interstitial the location of the tumor, the more rapid the growth, while the more pronounced the degree of pedunculation the less rapid the increase in size. Taking up the question of the physiological changes in the puerperium, Dr. Cragin believed that the variation likewise depended on the structure of the tumor. Thus there would be relatively little change in the almost pure fibroid, but relatively great changes in the large myomata or in those which were largely myomatous in structure. In order to make his position clearer the speaker called attention to the following case. He was called in to see a patient who had had a very pronounced postpartum hemorrhage, which resulted in almost complete exsanguination. On examination a large fibroid tumor could be made out of about the size of a child's head. The hemorrhage was checked with great difficulty and the family was later informed of the danger of subsequent pregnancies. About a year later the patient, who had finally recovered, called to see whether it would still be possible for her to take the chances of having another child. This finally took place and another examination after the second pregnancy resulted in finding no tumor at all. In this case the tumor was largely myomatous and involution had taken place in the tumor as well as in the uterus. The question must always be considered as to what advice to give women who present themselves with fibroid tumors accompanied by practically no symptoms, if they ask whether it is safe for them to become pregnant, or, if they are already in the early months, whether it is safe for them to continue. In other words whether it is ever wise to empty a pregnant uterus in order to prevent the growth of a fibroid which at that particular time and in the past had

*See original article, page 67.

given no trouble. It must be acknowledged that the tumor in all probability will grow if the pregnancy continues, but if up to that time it has given no trouble it may not do so later. It was very difficult to solve the problem, and yet Dr. Cragin thought there were exceptional cases where it was justifiable to empty the uterus because the tumor would probably grow and require operation if pregnancy continued. As to the question whether myomectomy during pregnancy was a wise procedure, Dr. Cragin thought that this was the worst time to do such an operation. The difference in mortality between myomectomy in pregnancy and Cesarean section with either myomectomy or hysterectomy at full term, was so slight, that with the exception of rare cases with pronounced symptoms, it would be wiser to allow the woman to go to term and then deal with the case by the abdominal route if necessary.

DR. J. D. VOORHEES said that while watching the cases of fibroids complicating pregnancy in his private work he had been impressed by the behavior of these patients. This might be considered his good fortune. Barring local pain, tenderness, and some discomfort due to pressure, he had not met with any of the complications mentioned by the writer of the paper. He had seen ten to fifteen cases with tumors varying in size from that of an apple to one about the size of a small watermelon, go to term without trouble. What nature did for the course of labor in these cases also impressed him. He recalled one case sent to him several years ago by Dr. Cragin. This patient had two fibroids each about the size of one's fist, wedged in the pelvis alongside of a three months' pregnant uterus. Dr. Cragin thought that she might need a Cesarean section at term. As pregnancy advanced and as the fetus grew in size, both the tumors were drawn out of the pelvis, so that after a moderately long labor, the child was delivered by forceps *per vias naturales*, no complications developing after labor and the tumors involuting with the uterus.

Dr. Voorhees mentioned what happened in two other cases of fibroids complicating labor where more or less neglect was in evidence, before the patients were brought to the hospital. In the first, the patient was in the second stage with a large tumor blocking the brim, so large that the child's head could not be felt by vagina and it looked as if Cesarean section would be necessary. Dr. Voorhees was able to push the tumor up out of the way and delivered the child without much difficulty by version. Three or four days after labor the patient developed a rise of temperature with evidences of sloughing of the tumor. An examination showed that the tumor, which was originally intramural, had entered the uterine cavity and had presented at the cervix which had almost completely redilated. Uterine contractions were present which, aided by pressure on the fundus, forced the tumor into the vagina. The pedicle was then tied off and the tumor removed. This left quite a cavity in the uterine

wall but the patient speedily recovered. In the second case, the patient had a fibroid blocking the pelvis, and the doctor outside the hospital had attempted to drag the child past it with the use of forceps. On admission to the hospital, the child was dead, so that it was removed by a craniotomy. Subsequently the tumor partially sloughed but the patient recovered.

DR. VOORHEES thought that the best plan was to leave cases of fibromyomata complicating pregnancy to nature. Surgical interference in such cases he considered only rarely necessary.

DR. F. A. DORMAN referred to a case in which he was forced to operate at about the fifth month, because the fibroid had undergone necrotic changes. The patient had been married for a number of years and had one miscarriage, an accident which is often elicited in the history of these cases with fibroid myomata. She was pregnant about five months when she developed a severe abdominal pain, with great tenderness localized on one side of the umbilicus. A tumor of considerable size was present. Temperature ranged from 100° to 102° for several days and it seemed absolutely necessary to do something. The application of an ice bag did not allay the pain or inflammation. Laparotomy was decided upon and, after opening the abdomen, a fibroid about as large as the fist was found in the anterior wall which had undergone necrotic changes and was extensively adherent to the omentum. A resection of part of the omentum with myomectomy was done and the wound in the uterine wall was sutured in layers. The woman made a good recovery without aborting and was delivered of a child at term. This was one of the relatively rare cases where there was nothing else to do, but Dr. Dorman believed very emphatically that otherwise these tumors should be left alone.

DR. JOHN DOUGLAS called attention to the favorable course which these cases often go through by citing a case which had been sent to St. Luke's Hospital. A laparotomy had been undertaken by an outside physician in the belief that an ovarian cyst was present and when it was found that the condition was a case of pregnancy in a fibroid uterus, the abdominal wound was simply sutured up with cat gut. Four days later the patient went into labor and was sent to the hospital with severe pains and hemorrhage. The cervix admitted two fingers with difficulty. A number of broad adhesive strips were applied around the body to strengthen the resistance of the abdominal wall, the operative wound in which was not, of course, entirely healed. The cervix was dilated manually, the hand introduced into the uterus, a foot seized, and delivery accomplished without any excessive loss of blood, and after the labor there was only moderate hemorrhage. The uterus finally contracted and no post-operative complications developed except that for several days the urine showed over 50 per cent. of albumin. For this reason a hysterectomy was not done at the time, but the patient was instructed to come back to the hospital after the kidney condition had improved. At the time of leaving the hospital the uterus

corresponded in size to that of a five months' pregnancy. Dr. Douglas heard subsequently that the physician who had first operated finally did a hysterectomy from which the patient recovered.

DR. W. H. W. KNIPE, after inquiring whether hysterectomy was recommended in those cases of early abortion when fibroids were present, and receiving an affirmative reply, thought that this method was too radical. He doubted the justice of sacrificing a uterus in such cases, for it was possible that pregnancy even here might take place and go to term without giving any trouble as shown by some of the cases reported during the evening. Again he thought that myomectomy might be done as a secondary operation, although he acknowledged that each case had to be judged on its own merits.

DR. RYDER referred to the frequency with which these fibroid tumors of the uterus disappear after delivery and cited a case which he had observed at the Sloane. The patient was sent in with a diagnosis of locked twins, one of which had been partially delivered by an outside physician, and the patient was admitted in this condition. Above the symphysis a mass could be felt which seemed to be another head, but after the extraction of the first child was completed this mass was found to be a large fibroid. The woman made a good recovery and when she left the hospital the tumor had diminished in size to such an extent that it was almost impossible to find it. The uterus was only slightly larger than it would have been ordinarily and if attention had not been attracted by the history of the case it is quite probable that a fibroid would not have been observed at all.

DR. R. W. LOBENSTINE, referring to the remarks of Drs. Cragin and Voorhees, called attention to the fact that they had merely accentuated one of the general points of interest in this subject; namely, that the majority of the cases with fibroids complicating pregnancy can and should be treated with conservatism both during pregnancy and labor, for most of the cases progressed satisfactorily without operation. He desired to repeat, however, that there were cases in which the conservative attitude would fail, as an example of which those cases might be cited where a large sessile myoma was present in the cervix or lower uterine zone, resulting in the production of a severe hemorrhage. Such cases could be handled safely from below in rare instances only, owing to the difficulty of gaining access to the uterine cavity. Here operative procedures directed from above would usually be demanded and delay was fatal. The case in Dr. Lobenstine's series referred to by Dr. Knipe was one of extreme difficulty and demanded active interference on account of the hemorrhage. As he stated in his paper, he would have preferred to do a hysterectomy at once, had the patient consented. The reasons for this decision were based on the following facts: 1, Because of the difficulty in gaining access to uterine cavity, and 2, because he felt certain that the patient was already infected at the time of

admission to the hospital. He desired to emphasize the fact, however, that he would not advise immediate hysterectomy, in any but such exceptional cases. He also desired to emphasize the risks during the puerperium in a patient having a gangrenous myoma. He thought it was a mistake to wait very long before doing an operation, if any marked symptoms had set in.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRI- CIANS AND GYNECOLOGISTS.

(Meeting of September 20, 21 and 22, 1910.—Concluded.)

DR. MAURICE I. ROSENTHAL, of Fort Wayne, Indiana, read a paper entitled

TREATMENT OF OBSTRUCTION OF BOWELS DUE TO MALIGNANT NEOPLASM.¹

DISCUSSION.

DR. J. H. CARSTENS, of Detroit, Michigan, stated that if there was one thing to be impressed upon the general practitioner it was this: when a woman had reached forty years of age or more, had no sepsis, and was steadily and continuously losing weight, with obscure symptoms in the abdomen, it was suspicious of malignant disease, and if these patients were explored early cancer might be detected when it is small, and radically removed.

The operation recommended by the essayist he thought was ingenious, but the only thing that struck him was simply cauterizing the ends of the bowels with carbolic acid, which would not be sufficient to stop hemorrhage, and one might have severe hemorrhage in these cases.

DR. ROLAND E. SKEEL, of Cleveland, Ohio, asked in what respect the method described differed from the two-clamp anastomosis in opening the bowel, as it seemed to him the bowel was opened in this way as in the ordinary operation.

DR. FRANCIS REDER, of St. Louis, Missouri, some years ago did a good deal of intestinal work, and introduced a rubber bulb for anastomosis. The operation described by Dr. Rosenthal was ingenious, and he thought would have a place in surgery. He thought we had gotten to the end of anastomotic work, and that the whole matter resolved itself into the use of suturing the bowel. This had been very much simplified, and the suture now made use of was that of Connell, and a single line. We did not go so far as placing an additional Lembert suture. In those cases where the patients' condition will permit, an additional suture should

¹See original article, page 84.

be placed, and if this can be done it is better for the surgeon. In other words, the surgeon could sleep better. Whether the essayist got proper approximation about the mesenteric attachment by this operation he did not know. It was sometimes an easy matter to anastomose the bowel, provided one could get it into the proper field where he could work, but at other times the surgeon was so placed that he could not bring the bowel into the field and extreme difficulty confronted him, and he was taxed severely as to what to do.

DR. C. C. FREDERICK, of Buffalo, New York, said Dr. Rosenthal's series of cases were extremely interesting and the anastomosis was very ingenious. However, he would fear hemorrhage following this operation. He had seen secondary hemorrhage in cases where the anastomosis of the gut had been made carefully and the mucous and submucous tissues even whipped over. The question of anastomosis of stomach with intestine was such a simple mechanical process that there was no necessity for multiplication of these various methods and all of this little bit of oddity of technic in the procedure. There was not one case in ten where one could not get the stomach or whatever part he wished to anastomose up into position. This could be done easily and rapidly, and the simpler the process one followed, the quicker he could make the anastomosis, and the better were the results. The only thing in making an anastomosis was not to spill the intestinal or stomach contents into the peritoneal cavity.

DR. JOSEPH PRICE, of Philadelphia, had practised drainage of the peritoneal cavity for a number of years for loathsome and distressing symptoms associated with malignancy. He had drained enormous accumulations of fluid in this way, commonly found in advanced malignant disease which threatened the lives of the patients, and he had opened peritoneal cavities of patients freely and drained them for many months, or even years, with good results.

DR. NATHAN JACOBSON, of Syracuse, New York, said if one recalled the cases of malignant disease that had been reported, in practically all of them the carcinoma involved the large intestine, and there was no doubt that carcinoma of the large intestine was found more frequently than cancer of the small intestine, and the conditions which presented themselves in cases of carcinoma of the large intestine were different from those when it affected the small intestine.

As to recognizing early carcinoma which involved the sigmoid flexure close to the pelvic floor, it struck him that one of the things which was helpful was the manner in which the examination was made. One could not always introduce a sigmoidoscope in making the inspection, and even then one might get hemorrhage, but he had repeatedly found that if the patient was examined in the recumbent position, with the thighs flexed tightly upon the abdomen, one could carry the finger up the rectum to a higher point and get almost into the sigmoid

and could recognize carcinoma or a tumor at this point when he would not be able to reach it in any other way.

As to the manifestations, we did not always have the manifestation of vomiting as the author of the paper had said. The farther from the stomach the cancer was located the later would be the vomiting. Sometimes vomiting did not occur until the patient was near dead. He recalled a case of carcinoma of the descending colon in a farmer who worked on his farm up to the morning he died. He even milked his cows on the morning he died. When he was called to relieve him of the obstruction, he found the patient had died before he got there. Autopsy revealed an encircling carcinoma which shut off the entire descending colon, so that one could barely pass a lead pencil through it, and yet the man was able to work up to the day of his death.

DR. LOUIS FRANK, of Louisville, thought there was some danger from hemorrhage, connected with this method of anastomosis. It would seem to him that there would be great difficulty in controlling the mesenteric angle of the bowel from which leakage not infrequently occurred and caused death.

DR. ROSENTHAL, in closing the discussion, said that so far as the technic of the operation was concerned, the bowel was united by the same old suture method which was used away back in the forties. This method was nothing new, nor did it take from the good of the ordinary bowel anastomosis, but one secured the old anastomosis with an aseptic field. He thought he had made it clear in his paper that carbolic acid cauterization was for the purpose of maintaining asepsis. The ends of the bowel were wiped off just the same as in an appendix operation, before the bowel was turned down. The carbolic acid did not control hemorrhage, but one met every required condition in bowel anastomosis that any other operation would meet, and so far as hemorrhage was concerned, as a safeguard there was the crushing of the ends. The suture was carried down so that the first layer of sutures controlled the hemorrhage. This was only surgical, and one would be expected to do this. The first layer of sutures should control hemorrhage; you rotate the forceps and put in the ordinary Lembert suture. Every requirement was met in the control of hemorrhage by this method the same as by any other suture method, and in addition thereto the ends of the bowel were crushed.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Meeting of October 27, 1910.

S. M. BRICKNER, M. D. *in the Chair.*

CONGENITAL TRANSVERSE SEPTUM OF THE VAGINA COMPLICATED WITH PREGNANCY.

DR. MAX ROSENTHAL presented this patient, a woman twenty-three years of age, who had begun to menstruate at the age of seventeen, but had never been quite regular. She was married early in July of this year and had consulted Dr. Rosenthal about three weeks later on account of irritation of the genitals, a bad discharge, and pain on coitus. Examination showed an eroded and injected introitus, a vagina about $1\frac{1}{2}$ inches long forming a pouch in which there were no traces of fornices. At the apex of the sac was a small opening which scarcely admitted a probe. Vaginal examination was very painful and the uterus could not be felt through the vagina, but he had the impression that the cervix lay directly above the opening of the sac. Rectal examination showed a small, anteфлекed uterus above the vaginal tube.

Three weeks after this time she again consulted Dr. Rosenthal and at this time presented symptoms of pregnancy. He had therefore to deal with a case of pregnancy complicated with a congenital partial atresia of the upper part of the vagina, or with a congenital incomplete transverse septum of the vagina. He seemed to be able to circumscribe the cervix with a fine probe introduced into the opening of the pouch.

Neugebauer in his monograph on congenital and acquired atresiae of the vagina mentions fifty-seven cases of congenital transverse occlusion of the vagina; and Brickner six or seven years ago published in the *Zeitschrift für Geburtshilfe und Gynäcologie* four similar cases. He had himself seen a similar case about a year ago.

Several theories had been propounded to explain the condition. Transverse partitions in the vagina were found normally in different animals, among others in the chimpanzee, and some regarded these deformities as atavistic manifestations or reversions to previous types. This anomaly might also be accounted for by an invagination of the Wolfian duct into the duct of Muller after the formation of the genital cord. Perhaps the most likely explanation was some irregularity in the absorption

of the Mullerian ducts during the first part of embryonal life, when these ducts became absorbed to form the vagina.

According to Neugebauer Cesarean section had to be resorted to in fifty-six cases, including twenty-two Porro operations. In one of Brickner's cases he had been able to effect delivery through the natural passages by simply making crucial incisions into the membrane which presented in front of the protruding head.

Inasmuch as pregnancy had intervened in this case before he had had the opportunity to decide what was best to do, he was at a loss as to what course to pursue, but had decided not to interfere at the present time as he did not care to risk inducing abortion by surgical manipulations on the genitals. He had further decided that an excision might not be advisable as a stenosis might result from the cicatrization of a circular granulating wound which might leave an even more impassable barrier to delivery than the present condition. When labor set in he would divide the septum if feasible; if not, he would perform Cesarean section.

DISCUSSION.

DR. SIMON MARX said that during the past twenty years he had seen three cases of a similar nature. In the first case the vagina was 1 1/2 inches in length and behind it one could feel the cervix. He was rather inclined to the belief that it was a transverse hymen. In this case, seen twenty years ago, the woman was in labor and the septum stretched. An incision was made into it and the baby promptly appeared. Four years ago he saw a Spanish woman and the baby appeared normally. The third case presented a transverse septum of the vagina. The woman was in labor and this transverse partition was torn through the vagina and perineum, dissecting entirely away the vagina from the rectum. This he had to sew up. Last year she was again in labor and her condition was cured. This appeared to be a high or misplaced hymen.

DR. JAMES N. WEST called attention to a complication that arose in one of these cases of transverse septum of the vagina in a woman who had aborted. She had retained secundines and it became necessary to curette her. The vagina was so narrow it was impossible to introduce a speculum. So he divided the septum, sutured with catgut, and then proceeded to curette her. She made an uneventful recovery.

DR. BANDLER thought that the case presented by Dr. Rosenthal was one of transverse septal division of the vagina.

DR. S. M. BRICKNER believed that the condition presented by the patient was not one of simple hymen but a congenital malformation, such as he had seen about twenty-five times. In all these cases they were able to demonstrate some vestiges of the hymen. The condition in itself was of no practical importance until the woman became pregnant. He had one case who became pregnant through a very minute opening in the trans-

verse septum. When an incision was made the child was delivered without difficulty.

DR. ROSENTHAL said that his first impression regarding the patient was that he was dealing with an imperforate hymen. He could feel the cervix on top of the opening. It was probably a congenital transverse septum of the vagina.

DR. BRICKNER continued the discussion on the etiology of the condition and referred to its anatomy as found in the whale, sheep, and other animals. He showed on the blackboard the different transverse septa of the vagina as they appeared in these various animals. They acted as barriers to retain the seminal fluid. These transverse septa represented a reversion of type. The case referred to by Dr. West occurred in the Lying-in-Hospital; she aborted at the third month. The upper portion of the vagina was a solid mass in the midst of which was the opening into the bladder. There was a large vesicovaginal fistula. The woman had been under observation constantly. The scar tissue so involved the tissues around the cervix that it was impossible for the woman to again become pregnant.

LARGE FIBROMA OF THE OVARY WITH TWISTED PEDICLE.

DR. LOUIS FRIEDMAN reported the case of C. T., an Italian girl aged 19. Her family history was negative. Menstruation began at the age of sixteen and had been regular until two years ago, when it stopped for ten months after which it again became regular. About six months ago, a hard mass was observed in the lower part of the abdomen, but as it was not painful no attention was paid to it. On the last day of menstruation, January 24, she was suddenly taken ill with severe colicky pains in lower abdominal region, which were not relieved by morphin. She vomited several times and had fever. When admitted to the hospital the pulse was 158 and temperature 104.2; the entire abdomen was rigid, but more so on the right side. A mass was felt in McBurney's region and some fluid was present. The symptom-complex was that of an abscess of the appendix with peritonitis. The usual incision was made and quantities of bloody serum and the tumor which was exhibited were found. Upon delivery it proved to be a fibroid of the right ovary with the pedicle twisted one and one-half times. The patient made an uneventful recovery.

The pathologist's report states that the tumor was almost perfectly oval in shape and measured 22 by 14 by 12 cm., was dark brown in color and of soft elastic consistency giving an almost cystic impression to the fingers. The surface was covered with smooth glistening peritoneum except along the attachment of the broad ligament. From the inner end of the pedicle the Fallopian tube stretched for a distance of 11 cm. parallel with the long side of the tumor and attached to it by the usual peritoneal folds connecting the tube to the broad ligament. The tube was enlarged to an outside diameter of 1.3 cm., ran an

almost straight course and ended in the free fimbriated extremity. An incision into the tumor showed that it was not cystic but solid. It was extremely vascular, and dark brown blood dripped from it during the entire period of preservation. Even at present, six months after its removal, it colored every solution in which it was placed within a short time. The entire mass gave the impression of a beginning general necrosis following the cutting off of the return venous circulation. Microscopic examination showed everywhere the same picture, a beginning general necrosis. Connective-tissue cells were manifest mainly by the nuclei which stained fairly well, whereas cell bodies and intercellular substance stained with eosin became one diffuse pink mass, without definite outline. Only at the surface of the tumor were the staining properties retained. No groups of atypical cells, or cells showing mitoses were found to indicate rapid growth or malignant change. All were characteristic of soft fibroma.

Throughout the mass were many dilated blood-vessels, over-filled with blood cells. No part of the tumor examined showed any remains of ovarian structure.

DISCUSSION.

DR. ROBERT TILDEN FRANK said he had never seen a fibroma of the ovary with a twisted pedicle. They required operation because fibroma of the ovary was very frequently followed by massive ascites. In fibromata that were comparatively small, the ascites was so marked as to draw attention to the condition.

DR. H. D. FURNISS recalled an instance of a girl seventeen years old. A growth was noticed and a diagnosis made of dermoid of the ovary. It was in front of the uterus. There was about 1 pint of free fluid in the abdomen.

POSTPUERPERAL PYONEPHROSIS.

DR. RALPH M. TOUSEY reported this case. Mrs. X., aged forty-four years, had always enjoyed good health until the time of the birth of her second child, February 4, 1910, twenty-four years after the birth of the first child. The delivery was effected without instruments, but the placenta did not come away readily and was extracted manually an hour later. On the fifth day postpartum there was a sudden rise of temperature to 103° F., and the uterus was explored without finding any retained portions of the placenta or membranes. Vaginal douches were given and the bladder was catheterized three times. Fever continued and there continued to be some slight bladder trouble from this time. Five weeks after labor the bladder trouble became more marked and urination more frequent, and the general health of the patient began to fail. Three months after labor she began to feel gnawing pain in the left lumbar region. Blood examination showed a low hemoglobin

percentage and a high leucocyte count. Four months after labor she had lost thirty pounds, was running a temperature daily, and passed urine hourly both during the day and night with vesical tenesmus. The left kidney was painful, tender, and presented a fluctuating tumor reaching to the navel, and pushing the enlarged spleen toward the median line. The right kidney was palpable but not painful. Urine from the bladder and the left kidney was full of pus, but without casts or kidney elements. *Staphylococcus pyogenes aureus* alone was present. Cystoscopy showed a cystitis without ulceration, pus issuing from the left ureter and cloudy urine from the right. Treatment with urotropin, abundant fluids, and bladder irrigations with boric acid lessened the discomfort.

Operation was decided upon and an incision made over the fluctuating tumor which was incised and several pints of creamy pus evacuated from the pelvis of the left kidney. Slight adhesions to the descending colon were separated and the pelvis and the abscess in the upper cortical portion of the kidney freely communicating with it were drained with rubber tubing and gauze and the wound was partly closed. Drainage seemed to be preferable to nephrectomy as there seemed some good kidney tissue left, and the other kidney was thought to be slightly involved. Relief from all disease symptoms was immediate, the temperature only once rising above 100° F. The dressings were at first saturated with purulent urine, which was later deflected into the bladder. The tube was removed on the tenth day, the tumor mass disappeared and the urine gradually approached normal. After eight weeks' stay in bed the patient gradually regained her health and strength. Urotropin and abundant fluids were continued and at present, four months after the operation, there was a granulating wound 1 1/2 inches long and 1/2 inch deep with a urinary fistula through which 1/2 ounce of urine leaks daily. The bladder urine still shows a slight trace of blood.

TOXIC HEMATOPORPHRINURIA (SAFRON) COMPLICATING SEPTIC PERFORATION OF THE UTERUS.

DR. SOLOMON WIENER reported this case. As saffron is rarely ingested in poisonous doses our knowledge of its general toxicology is scant. Its chief constituents are a dyestuff, crocin, a glucoside, picrotoxin, and an ethereal oil. No study has been made of their individual actions. Large doses irritate the mouth, stomach, and intestinal mucosa. Tincture of crocus formerly enjoyed quite a reputation as an emmenagogue and abortifacient. Borellus, in his "Medicophysical Histories and Observations of the Fourth Century" gives an interesting account of the use of this drug. He says that after the ingestion of considerable quantities one observes severe abdominal pain, weakness, prostration, headache, vertigo, delirium, and uterine bleeding; repeated ingestion produces abortion in three days. Kobert also states that large doses actually produce contractions

of the gravid womb, but also severe abdominal cramps and loss of consciousness. He quotes Corvey who reports a fatal case in which autopsy showed exudation of blood into the stomach and intestines with slight nephritis. Ferraris reports another fatal case in which autopsy revealed saffron in the intestines, the urine bloody, but everything else normal.

The history of the present case is as follows: L. K., previously a healthy woman, was admitted to the gynecological service of Mt. Sinai Hospital on July 10, 1910. She had been three weeks overdue her menstrual period and had taken repeated doses of saffron, and had been using hot mustard baths to induce abortion.

The day before her admission she had taken hot vaginal douches, and inserting a hard rubber-tube about 6 inches. This was followed by severe abdominal pains and the patient did not know whether she had entered the uterus or not. She passed half a cupful of bright red blood per vaginam and had chills, fever, and vomiting. Her general condition was poor, facies anxious, pale, and lips cyanotic. The eyeballs were icteric, tongue dry, temperature 102° F., pulse 124, regular, soft, and compressible. White blood cells were 15,000 and polynuclears 87 per cent. The upper part of the abdomen was lax and tympanic and the lower half rigid, with dullness on percussion. There was movable dullness in both flanks. The cervix was soft, admitting the tip of the finger and the uterus was enlarged to the size of a two months' pregnancy.

Catheterization yielded a small quantity of port-wine colored urine. This gave rise to the suspicion of bladder injury. Urinalysis, however, showed no red blood cells, no hemoglobin, a few granular casts, amorphous urates, and a trace of albumin. The reaction was acid. Another specimen was examined and the presence of hematoporphyrin reported. The patient was operated upon five hours after her admission and 8 ounces of fluid blood found in the abdomen. All visible peritoneum was injected, and on the posterior surface of the uterus, close together, were two small irregular perforations. A rapid pan-hysterectomy was done, the pelvis drained with three gauze strips passed down the vagina, and the abdomen closed. The tubes and ovaries were intensely congested and both ovaries were cystic; corpus luteum of pregnancy was present in the right ovary. The patient was placed in the Fowler position and Murphy irrigation started. Camphor and morphin were administered by hypodermic. Small quantities of urine taken by catheter were at first brownish red and then almost black. The pulse and general condition grew progressively worse; lips and extremities deeply cyanotic and then of a remarkable purplish-black hue. She sank into coma and died eleven hours after the operation. Autopsy was refused.

A blood culture taken intra vitam was negative, and there was no growth in the tube inoculated with peritoneal fluid.

It was a difficult matter to say to what extent the drug toxemia contributed to the fatal issue, yet the profound disturbance of pigment metabolism, the peculiar discoloration of the lips and skin, and the rapid onset of coma indicate that the immediate cause of death was saffron poisoning and not peritonitis. The patient withstood the shock of the technical operation easily, and it was rather unusual for peritonitis to kill so rapidly. The hematuria had to be attributed to the ingestion of saffron. Whether this condition in the present case was indirectly due to an intestinal hemorrhage, or directly to a disturbance of pigment metabolism, it was not possible to say.

DR. ROSENTHAL said that saffron was first used as a coloring in the making of bread and it was a common agent for producing abortion. Some years ago there appeared in a medical weekly a report of a large number of cases in which death was due to saffron taken to produce abortion.

FOUR CASES OF URETERAL CALCULI.

DR. H. D. FURNESS reported these cases which gave very different clinical histories and for this reason were instructive. They taught that ureteral calculi might exist with few, if any, of the classical text-book symptoms.

CASE I.—Mrs. H., fifty-seven years of age, the mother of three children the youngest of whom was twenty-three years of age. Labors and puerpera were normal and her previous history was negative.

About one year ago she experienced colicky pains in the left renal region, which were not radiated to the front, upward, nor downward, nor referred to the opposite side. These pains lasted about twelve hours during which time she was nauseated and vomited. There was no frequency of urination during the attack, but a month later she began to be troubled with frequent micturition, which had existed up to the present time. Since this attack she has had three others. The urine has a specific gravity of 1018, is clear, without albumin casts or crystals; there are a few leucocytes and a few red blood cells.

Physical examination of the abdomen reveals nothing abnormal excepting a small elongated mass in the region of the left ureter, to the left and slightly behind the cervix. A catheter inserted into the orifice of the left ureter meets an obstruction $\frac{3}{4}$ inch up, that is passed with considerable difficulty. The two ureteral orifices appear normal as does the bladder. A radiograph shows a shadow in the ureteric region at just the point of obstruction. Thus far, the patient had objected to an operation and dilatation has failed to effect the passage of the stone.

CASE II.—Mrs. E. R., aged fifty-three years, the mother of nine children, the youngest being ten years old. All labors had been normal and her previous history was negative. Five years ago she began to have attacks beginning with lassitude and

followed by a sensation of lameness in the right outer thigh; after this had lasted for a few hours, there was pain in the right renal regions, which soon radiated to the front and downward along the course of the uterus to the bladder. Frequency of urination then occurs, but the act does not relieve her desire. During the attack the urine is clear, but becomes turbid the following day and she is prostrated for a week. Occasionally she has been jaundiced and has vomited. These attacks have been occurring at intervals of eight or ten weeks.

An attempt was made to catheterize the ureters and distend the kidney pelvis with boracic solution to determine if the produced pain would be like that complained of. An obstruction was met with 3 1/2 inches from the vesical orifice. A radiograph shows two shadows at this point one above the other. Indigo carmine was injected into the buttocks and blue-colored urine from the left ureter appeared in twelve minutes, but there was no flow of urine nor discoloration from the right. Under ether an incision at the outer border of the right rectus through the transversalis fascia was made, the lower end of the incision being 1 1/2 inches above the level of the symphysis and the upper just short of the umbilicus. The peritoneum was stripped from the pelvic wall to a point below the ureter, the ureter going with the peritoneal reflection. The stones were felt, and the ureter above them held with a sponge forceps. A small longitudinal incision was made in the ureter and the stones removed by pressing them out. The opening in the wall was closed by a few fine catgut stitches. A stab wound was made from a point over the iliac crest to the wound in the ureter and a cigarette drain inserted. The wound was closed in layers with catgut. The drain was removed at the end of forty-eight hours. The patient was up on the ninth day and had had no return of her former trouble.

CASE III.—The wife of a Canadian physician as seen on June 10, 1910. She was forty-seven years of age, had had seven children. The first labor was instrumental, and was followed by puerperal fever and phlebitis in both legs. For three years she had attacks of pain, associated with temperature, in her right kidney. She had constant pyuria until after three years, during which time she had several attacks, which terminated after a severe one during which a large amount of pus was discharged through the bladder. Two months after this she began to have pains in the left kidney region. During an attack the urine would be clear, but between attacks there was pus constantly. During the past year she had had several of these attacks. She has had no frequency of urination except at night.

Examination of the pelvis is negative. The bladder and both ureteral orifices appear normal. No. 5 catheters are passed easily to the pelvis of the kidney on either side. The urine from the right kidney is clear, that from the left is turbid from the presence of pus. Two radiographs were taken, one of

which shows the presence of two stones in the left ureter. The second shows the same stones with a bougie inserted past them.

CASE IV.—Mrs. T. L., aged twenty-six, married, two children; was well until four months pregnant the second time, when she had severe crampy pains in the lumbar and inguinal regions, which lasted for eighteen hours. She was ill afterward and had temperature for a week. After this she had pains at times in both inguinal regions. She does not remember any frequency of urination. Three weeks after her labor she passed a small oval stone, the only pain experienced was when the stone passed through the urethra. Three weeks later she passed another stone. On this occasion she had some frequency of urination before the severe pain. During the past two months she has noticed that the urine has a deposit on standing. She has lost some strength. Cystoscopy shows both ureteral orifices and the bladder to be normal. A catheter passed into the left ureter is obstructed 3 inches up the ureter. Upon the right side there is an obstruction 9 inches up. Radiographs show two branched stones in left kidney; stone in the left ureter opposite the transverse process of the third lumbar vertebra; two stones in the pelvic position of the left ureter; stone in the opposite transverse process of third lumbar vertebra, right ureter. The urine from the right side is clear, but there is a moderate amount of blood from the left side. The woman refuses operation during pregnancy.

DR. J. VAN DOREN YOUNG read a paper on

THE VALUE OF LOCAL TREATMENT IN GYNECOLOGICAL CASES.*

DISCUSSION.

DR. SAMUEL W. BANDLER wished to call attention to two or three facts that had been impressed upon him as being important in the treatment of cases by other than operative procedures. He had gotten over the idea that when they got much higher than the external os, or possibly the internal os, that drugs applied locally or in douches were of much efficiency. Their action upon the higher areas was purely a mechanical one. When douches of from two to twelve quarts were given, he asked what they accomplished by such douching. It should be remembered that water at a certain temperature would produce anemia, while at another it would produce an hyperemia. However, one should have in mind the mechanical principles involved. We aid the patient when we accomplish an anemia or an hyperemia, according to the indications. Dr. Bandler was a great believer in the value of electricity; he considered it one of the best agents for use in nonoperative cases, applying one pole in the cervix or in the uterine canal; here a mechanical principle was applied and one could obtain an anemic condition or an hyperemic condition, according to his wants. Another factor

*See original article, page 30.

that he had found of value in his experience was the substitution of gauze for vaginal packing for the cotton tampons. He now rarely used the cotton tampon. The latter was not of value in supporting the uterus. He used boroglycerid on the gauze, packed it into the vagina, and this was a great aid in supporting the uterus. It not only held it up in position, but it relieved congestion, etc. From a study of the mechanical idea, one got the best results. Another important point he brought up was that where operation was not urgent, the patients should be prepared for operation beforehand. In other words, he adopted the principle of applying postoperative treatment before the operation was performed.

DR. JAMES N. WEST said that if there was any condition in which local treatment was of great value, it was in laceration of the cervix; it was very important that the cervix should be treated before operation. Oftentimes one found the cervix filled with small cysts, erosions, etc., to such an extent that amputation seemed necessary. But by a treatment of from four to six weeks that cervix may in many instances be relieved of the diseased condition and then it becomes merely a matter of a simple trachelorrhaphy with retained fecundity.

With regard to the treatment of retroversions, he recalled several instances in which the retroverted uterus was in the hollow of the sacrum and abortions occurred about the third month in each case. In two of these cases the women refused operation and he was able, by packing the vagina, to support the uterus and hold it above the pelvic brim until the natural enlargement of that organ from the growth of the fetus kept it up and so the women were permitted to go to term. However, he did not treat retroversion by packing as much as he used to, because operative procedures now were so satisfactory. In 1895 when he became Assistant Surgeon at the Woman's Hospital under Dr. Emmett a large percentage of the women applying for help had inflammatory conditions or retroversion, and it was suprising the relief they were able to afford these patients. They used lamb's wool for packing, and only used cotton for medication. Such tampons could remain in the vagina two or three days without irritating the patient at all, and there was no odor. This was very important in the treatment of gonorrhea of the vagina and vulva. There was a limitation in the treatment of gonorrheal and other forms of endometritis. He had tried intra-uterine treatment with argyrol, silver nitrate, and other medications, applying them to the interior of the uterus, but he never got any satisfactory results. He felt that the local treatment, so far as inflammatory conditions were concerned, was limited to the cervix, the vagina, and the vulva.

DR. JOHN O. POLAK said that it was suprising how little the general practitioner knew about the introduction of the pessary at the present time. Those that are introduced by them are ill fitting and improperly placed. Unless properly applied, the

vagina would not tolerate this foreign body. Dr. Skene had suggested that the vagina should have preliminary treatment before a pessary was introduced. If a pessary was placed into the vagina when the patient was first seen, she would wear it with considerable discomfort. But if they obtain a tolerance, it was amazing the length of time she may wear it without any discomfort. He agreed with what had been said in regard to intrauterine applications; applications cannot be made there that will do good. In gonorrheal cases, nature in time would kill the gonococcus inside the uterus. He had in mind a large number of pus tubes, and he had followed them for years, five or ten, and then had opened the abdomen and found them intact. He had seen pregnancy occur in such cases. Every tube containing the gonococci did not always form a pyosalpinx. With regard to medication, the douche worked well in cases of leucorrhea, especially when a dilute ($1/2$ to 2 per cent.) lactic acid solution was used.

DR. CHARLES GARDNER CHILD called attention to the vagueness of the description in the text-books as to how to make applications through the vagina and to the vagina. The proper method was to have the patient in the knee-chest position, retract the perineum with the finger or speculum, and, when the vagina bulges out from the in-rush of air, make the application; it then could be done with the greatest ease and thoroughness.

With regard to the use of pessaries, he believed that if more definite rules were laid down in regard to the applicable cases, they would have better results than they were getting to-day. The only field for the use of a pessary was in displacements with a freely movable uterus and one which was replaceable. The less tamponing that was done, the better for the patient. The vagina should always be prepared before the introduction of a pessary.

DR. ROBERT T. FRANK said that particularly in dispensary practice there were two classes of cases very difficult to treat. First, young women who, after childbirth, developed rectocele and cystocele with leucorrhea. An operation would relieve the condition and, therefore, was to a certain extent indicated, but the contraindications were even stronger from the fact that if such a patient had more children the operation would be nullified and act as a distinct hindrance to childbirth. In these cases it was better to treat the patient along the lines suggested by Dr. Young.

Second, there was a class of cases with diseased adnexa which had passed the acute stage, in whom the pains were comparatively slight and mal-positions present. Tamponing and other mechanical measures relieved these patients to a certain extent; but Dr. Frank had followed some of these individuals for a number of years and the improvement noted was never well marked and the results unsatisfactory. In the few instances in which these women had been induced to submit to operation,

a more radical operation proved necessary than the procedure determined upon beforehand. In these two classes of cases medical treatment was very unsatisfactory, but, for the reasons given, was nevertheless preferable in young women to operative interference.

DR. SOLOMON WIENER called attention to another form of local treatment, the use of hot air, the hot air cabinet; this markedly relieved the one symptom of pain. Usually two applications of twenty minutes each were made; after the second application these patients would return to the dispensary and state that the pain was much relieved.

DR. JOHN VAN DOREN YOUNG saw a great many patients at the clinic for whom something should be done and it seemed a pity not to do something to help them. They should not forget the nonsurgical side of gynecology. He called attention to the interesting work of Cabot of Boston, in nonoperative gynecology.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Hydramnios.—E. Burstal (*Practitioner*, July, 1910) analyzes 133 cases of hydramnios of which six were twin pregnancies, seventy-four male and only sixty-one female. Monsters and deformities were rare. Two were anencephalic, one was hydrocephalic with double hare-lip, spina bifida, and talipes, and one had hare-lip and cleft palate, *i.e.*, four deformities out of 139 children born. The effect of the excess of liquor on the second stage of labor was not marked, the average duration being about one and one-half hours. The excess of liquor amnii seemed to predispose to postpartum hemorrhage, it being recorded in nineteen cases. The presentation was vertex in 122 cases, breech in thirteen cases, face in two, and transverse in one. The excess of fluid does not seem to predispose to abnormal presentations. The age of the mother cannot be considered a predisposing cause for hydramnios, the ages vary from eighteen to forty-six, nor can the number of the pregnancy as hydramnios occurred in pregnancies varying from the first to the fifteenth. In no single case was there a previous history of hydramnios. Albumin was present in the urine of the mother in 46 out of 112 recorded cases.

Congenital Hematocolpos, Hematometra, and Hematosalpinx.—A. H. N. Lewers (*Practitioner*, Aug., 1910) says that in most cases of retained menses the fluid is contained in the distended vagina alone, and the uterus is not dilated. The condition is one which may be conveniently termed simple hematocolpos. In such

a case it is merely necessary to divide the obstructing septum and allow the retained fluid to escape. There is in such cases no risk in hastening the escape of the fluid by pressure on the abdomen, or by using a vaginal douche. There is no special liability to sepsis in cases of retained menses more than in any other operation case. The supposed inherent liability to sepsis in certain cases of retained menses is to be explained by the presence of hematosalpinx in addition to hematometra and hematocolpos. The dilated tubes become infected once the vaginal septum has been divided. If hematometra exist as well as hematocolpos, a condition which is easily recognisable after opening the vaginal septum by finding that the finger passes the internal os into the uterine cavity, the probability that the Fallopian tubes are dilated is so great that the safest course is to perform an exploratory laparotomy. The tubes, if found dilated, can then be removed. If it is likely to be impossible to keep the vagina patent, the uterus should be removed also.

Tuberculosis of Fallopian Tubes a Cause of Ectopic Pregnancy.

—A. M. Taylor (*Amer. Jour. Surg.*, 1910, xxiv, 173) says that out of his sixty-four cases of ectopic pregnancy forty-two were tuberculous, the pathological condition having been confirmed in the laboratory. These clinical experiences, strengthened as they are by the inherent probability of tuberculous infiltration being obstructive rather than destructive to normal fetal growth, have convinced him that in tuberculous salpingitis we have the most common cause of ectopic gestation.

Blood Pressure in the Toxemia of Pregnancy.—J. C. Hirst (*N. Y. Med. Jour.*, 1910, 1204) has found that the normal blood pressure in normal, healthy, nonpregnant women will not vary much from 112 mm. (100 personal observations with the Faught apparatus). The normal blood pressure in healthy pregnant women will average close to 118 mm. A slight increase over these figures is to be expected in the last month of pregnancy (100 normal pregnancies). Blood pressure in toxemia in the first half of pregnancy associated with pernicious vomiting is invariably low. Blood pressure in toxemia in the latter half of pregnancy, associated with albuminuria and eclampsia, is invariably high. A high and rising blood pressure is an invariable and early, often the earliest, sign of toxemia in the latter half of pregnancy. Upon the rupture of the membranes, there is an immediate fall of pressure of from 60 to 90 mm. This fall is temporary only, but is attended with marked relief in the headache and epigastric pain these patients so frequently complain of. The relief from these symptoms lasts, however, for some hours after the pressure returns to near its original height, which it does shortly after the first fall. A similar fall, but much slighter, is noticed after a sweat bath. There is a second fall of from 60 to 90 mm. after the child is born. This again is only temporary, and in from fifteen to thirty minutes, if a patient has not bled profusely, the pressure is back to somewhere near, but not quite to, its level before the birth.

Usually, in eclampsia, the pressure measures high for forty-eight hours after the birth, then begins to subside and reaches the normal of from 118 to 124 mm. in from seven to ten days after delivery. As far as it is possible to lay down any rules in these cases, a blood pressure of below 125 mm. may be disregarded; a pressure of from 125 to 150 mm. needs careful watching and moderate eliminative treatment; and a pressure of over 150 mm. needs usually active eliminative treatment, and will in all probability, especially if it shows a tendency to climb higher, require the induction of premature labor.

Placenta Previa.—E. P. Davis (*Med. Rec.*, 1910, lxxvii, 1037) summarizes the results obtained in the treatment of central placenta previa as follows: Under the use of the gauze tampon and version, or version and extraction, the average result, under favorable conditions, gives a maternal mortality of 11 per cent., and a fetal mortality of 57 per cent. If the practitioner performs version, and is careful not to proceed to extraction, but to wait for uterine action and spontaneous delivery, the fetal mortality becomes 100 per cent., although the maternal mortality may be reduced between 6 and 7 per cent. If central placenta previa be treated by the introduction of the elastic bag, the maternal mortality in favorable cases may be reduced to 5.5 per cent., and the fetal mortality to 30 per cent. This is an evident gain for mother and child. If a case of central placenta previa be seen early, and hemorrhage has been slight, and the mother and child are in good condition, and the child well developed, aseptic delivery by abdominal section will give a maternal mortality not exceeding 5 per cent., and a fetal mortality of *nil*. The writer advises that central placenta previa, like ruptured tubal gestation, should, if possible, be transferred to hospital and treated by abdominal section. If this is impracticable, and aseptic technic can be carried out in the patient's dwelling, operation should be done there. Where an effort is to be made to save the life of the child in the patient's dwelling, and abdominal section cannot be performed, the introduction of an elastic bag through the placenta, under aseptic technic, may be attempted. This should be followed by vaginal delivery, if possible, by forceps, and in many cases by version. If the life of the child is not to be regarded the cervix should be sufficiently dilated to permit version and the bringing down of one or both thighs and the breech. Complete dilation and uterine contractions should be waited for before delivery is undertaken. If possible, the spontaneous expulsion of the fetus should be secured.

Education of the Mother in Relation to Infant Mortality.—E. B. Sterling (*Arch. Ped.*, Aug., 1910) has noted in a series of 112 pregnancies occurring in sixty-six women who had much training in physical exercise, and in whose student life the study of hygiene had been specially emphasized, the following facts: The death-rate among the children of these marriages is lower

than that given for the registration area of the United States, which is about 14.5 per cent. Eliminating the "so-called unavoidable causes" connected with birth, the death-rate is markedly lower. The percentage of premature births is scarcely more than one-quarter that noted by Ballantyne in maternity hospitals. Abortions occur about one-quarter as frequently as in most series of cases. The percentage of breast-fed children is not as great as that given by Holt for New York City, which is probably about the average for all large centers of population in this country.

Some New Ideas on the Streptococci of the Puerperal State. Healthy Carriers, Unsuspected Carriers, Determination of Virulence of the Hemolysing Streptococcus.—Fabre and Bourret (*L'Obstét.*, Aug., 1910) as a result of experiments conducted by them in the Obstetrical Clinic at Lyon, believe that they have shown that in patients whose temperature in the puerperal state has not risen above 37.5° C. a hemolysing streptococcus exists in 11 per cent. of all cases. He calls the subjects of these latent infections *healthy carriers of streptococci*. There is another set of cases in which there is a very slight rise of temperature, and which do not show clinically evidences of streptococcus infection. The authors call these *unsuspected carriers of streptococci*. The hemolysing streptococcus found in these two sets of cases is a perfectly virulent one, and capable of giving to other patients severe infections. The different effect of these streptococci in different individuals is accounted for by different degrees of resistance, different mode of inoculation, and varied degrees of virulence. Healthy carriers and unsuspected carriers are a source of great danger to the patients in a maternity hospital; they frequently act as the beginning of epidemics of serious nature. There is great need of detection of these carriers, and the best method is the culture of the lochia on solid media, following the methods of Lenhartz and Schottmuller. It is also important to be able to diagnose the degree of virulence of germs by their colonies in blood-agar. The authors have experimented with Frommes' method and that with lecithin bouillon. These methods are not thoroughly practical or certain, and further researches are necessary. By the size and number of colonies we may tell how virulent these germs are likely to be, since the more virulent ones produce larger colonies and more rapidly than the less virulent.

Origin and Prevention of Puerperal Fever.—A. Döderlein (*Münch. med. Woch.*, Aug. 16, 1910) says that there are two sources of puerperal infection; the bacteria contained in the vagina of the patient herself, and those that are brought to her from without, by her physician and attendants. The bacteria that live in saprophytic form in the vagina by their interaction are a protection against bacteria from without, through their production of lactic acid. If we find in a puerperal woman that the normal bacterial condition of the vagina is altered, then we must exer-

cise care to prevent fever. It has been the custom to disinfect the vagina before labor by means of a vaginal antiseptic injection. By this means we remove the natural bacteriological protection in the vagina, and at the same time make the mucosa so dry that it is much more likely to be injured during childbirth. The author, with the assistance of the physicians in charge, made investigations in the hospitals for women in Tübingen and Munich, of the results of douches and of absence of douches before labor. In one hospital 1-1000 corrosive sublimate was used in 500 women, in the other 1- $\frac{1}{2}$ per cent. lactic acid was used in another 500 women, and in each case a comparison of the results was made with another 500 women who received no douches. On comparing the percentage of fever cases with and without douches it was found that there were more cases of fever when douches were given than when they were not. This shows that disinfection of the vagina is harmful rather than beneficial. As to the other source of infection, the hands of the examiners, it has been found that there is no way of positively removing all bacteria from the skin, especially when the hands are made harsh by work; but if we use very thin rubber gloves carefully disinfected with live steam, we shall be just as well able to feel the vagina and cervix and we shall be incapable of bringing bacteria from without. Therefore, it is the opinion of the author that rubber gloves should be used in all cases of labor, thus avoiding the complications that do not occur when delivery is attempted without vaginal examination.

Relation of the Positive Reaction of Wassermann in Human Milk to Wet-nursing.—Oluf Thomsen (*Berl. klin. Woch.*, Sept. 19, 1910) says that it is quite possible for a normal infant to be infected with syphilis by a syphilitic wet-nurse, and it is most important to find a practical test for the milk of the wet-nurse before engaging her. From his investigations he concludes that both the blood serum and the milk of every wet-nurse should be tested by the Wassermann reaction. The milk test should be made just before labor or within two days after it. A positive serum reaction here has the same meaning as elsewhere, generally showing the presence of active syphilis. Absence of reaction does not show absolute freedom from syphilis. Positive reaction of the milk make syphilis very probable. A slight reaction may be found in the milk of healthy women, but never a marked reaction such as is given in syphilitics. Absence of reaction is a presumption against syphilis, but it may result from careful mercurial treatment, although the milk is less affected by mercurial treatment than the serum. A tabulated report is made of the milk tests in fifty-three mothers, in whom syphilis had occurred from a few months to fourteen years previously. There were fifty-two positive reactions with milk, and thirty-three with blood serum. The tests made in 200 nonsyphilitic women showed ninety-six positive reactions, ninety-eight negative, but the dilution was less than with serum.

Morbidity in the Puerperal State after Premature Death of the Fetus and Syphilis of the Mother.—Oscar Jaeger (*Münch. med. Woch.*, Aug. 30, 1910) says that in the last four years there have been treated at the Kiel Frauenklinik, sixty-seven cases of macerated fetus in the last half of pregnancy. Of the mothers forty-six had syphilis, six nephritis, one anomaly of the placenta, and one infection of the amniotic fluid. He finds that among these cases there were an abnormal condition in the puerperal days in a large proportion of women. Twenty-four cases had fever, some with serious conditions, and two died. There were three cases of severe septic endometritis. In fifteen cases fever was slight, and general disturbances not marked. In twenty-one cases the lochia was fetid. There were 117 cases of pregnancy infected with syphilis, with forty-six macerated fetuses, and fifty cases of fever. Of these twenty-eight had no genital lesions. The author concludes that the greatest cause of death of the fetus is syphilis, and that the mothers do not escape evil consequences of the maceration.

Nephrectomy and Pregnancy.—Pousson (*La Gyn.*, Sept., 1910) considers the remote results of nephrectomy and the organic resistance of these individuals who have undergone the operation, and whether they should marry. The author gives the results of sixty-six operations collected from medical literature. It has been shown that after removal of one kidney the remaining organ takes the place of the two kidneys, through hypertrophy of the parenchyma, the elements increasing in volume, and the epithelium multiplying by karyokinesis. The diseased kidney is also capable of this multiplication. This increase is a permanent one and results in increased urinary action. When a diseased kidney has been removed the lesions of the opposite kidney may be seen to retrocede and disappear. All the sixty-six patients became pregnant and there were but seven abortions. Several were pregnant as many as three times without accident. At the times of reporting, all but five patients were alive and well. Of these five, three died of tuberculosis, one of typhoid, and one in the third pregnancy after the operation. If one is asked whether such a patient should marry an affirmative answer should be given only after repeated examinations of the urine and careful observation of the patient. If there are polyuria and albuminuria marriage should be forbidden. The nature of the disease for which nephrectomy was done is important. If done for cancer there can be no propriety in marriage; if for tuberculosis marriage is proper, since these recoveries are general. For lithiasis, pyonephrosis, or pyelonephritis the prognosis is not quite so good as for tuberculosis.

Placenta Marginata.—Ch. Funck (*Ann. de gyn. et d'Obst.*, Sept., 1910), as a result of an anatomical study of placenta marginata, gives it as his opinion that this is not a pathological condition. No pathological cause, not even endometritis, is an invariable accompaniment of this condition. Compensatory

hypertrophy of the margin of the placenta due to an insufficient chorionic space is rather a proof of good function of these placentas. The author has made an examination of the records of 649 placentas collected at the Maternity at Nancy, among which there were 136 specimens of placenta marginata. By this the author understands a placenta in which the chorion is inserted on only a part of the fetal face of the placenta. The fetal face of the placenta is covered along its border over a space of six to seven centimeters with a prolongation of the reflected decidua and the decidua vera. There is a more or less circular extrachorionic portion, similar to the margin on the edge of a leaf of a book. There are several varieties of this condition, with variations of foldings of the membranes at the edge of the placenta. A margin cannot exist until after the third or fourth month, the period when the definite limitation of the chorion takes place. The cause of this condition rests on an excessive atrophy of the villi when this occurs. The insertion of the membranes occurs within the margin that is further from the border of the placenta. The author believes that the function of these placentas goes on as well as in other normal placentas, and that the child is equally developed; but there are more cases of retention of the placenta in these patients than in others.

Experimental Observations on the Toxicity of the Placenta.—Guggisberg (*Zeit. f. Geb. u. Gyn.*, Bd. xlviii, 1910) says that eclampsia is an acute disease and rapidly goes on to recovery or death. Uremia, on the contrary, is a chronic condition that may be improved, but is not curable. In eclampsia the autopsy shows a typical condition; degeneration of kidneys, anemia and hemorrhages of the liver, edema and hemorrhages in the brain and heart, and multiple thromboses. The pathological condition in eclampsia suggests a general poisoning, the result of intoxication. Schmorl thinks that in every pregnancy there is a deportation of elements of the villi. If there are few cells the syncytiolysin is set free and neutralized. If too many cells are formed poison is set free. According to the author eclampsia is caused by cell elements freed into the blood of the mother by an overproduction of syncytiolysin or by toxins. Lichtenstein argues energetically against the placental theory of eclampsia. The author undertook to repeat the experiments of Schmorl. His experiments numbered twelve. His conclusions are given us thus: The cell-containing juice of the human and animal organs when injected into dogs causes death from coagulation and embolism. In the placenta are materials which cause death from poisoning in dogs. The symptoms of cell-free juices are different. The placental poisons are in different quantity in different placentas; in some placenta poisons are absent. The action of the placental juice is complex; one component causes blood coagulation; the other component is of a different nature, not absolutely demonstrated. The action is lessened by dilution of the juice. On heating the poison no

new observations are possible, since the coagulation point for placental material is about 50° C. Neither in normal nor pregnant serum are powerful antibodies present. The cell-free juice of several organs produces no effect on injections into dogs. But juices of some glandular organs cause poisoning of animals which normally differs from that of the placenta.

GYNECOLOGY AND ABDOMINAL SURGERY.

Significance of Antitrypsin in Gynecology.—A. von der Heide and E. Krosing *Zeitschr. f. Geb. u. Gyn.*, Bd. LXVII, 1, 1910) affirm the identity of antitrypsin and antileukocyte ferments. They find that the antitrypsin content of the blood is increased in carcinoma in 80 to 90 per cent. of cases, in pyosalpinx, sepsis, pregnancy, the puerperium, and generally in myoma. No prognostic inferences can be drawn from a positive test in operations for carcinoma. Myoma, carcinoma, and pregnancy can be differentiated by the antitrypsin test, while pyosalpinx and tubal pregnancy cannot. Nephritis in the last months of pregnancy and the puerperium does not show the same blood phenomena as appear in the normal woman. The cause of the antitrypsin reaction is the increase of the metabolic changes in the albumins.

Röntgen Therapy in Gynecology from Personal Experience and the Results Recorded by Others.—M. W. Griscom and G. E. Pfahler (*N. Y. Med. Jour.*, 1910, p. 1328) believe that by means, of Röntgen therapy a decrease or obliteration of the functions of the ovaries can be brought about, and as a result a control of menorrhagia and metrorrhagia, when due to myomata, as well as control of other menstrual disorders due to overactivity or excessive irritability of the nervous mechanism connected with the ovary. The treatment should be confined for the present to inoperable fibromata or to menstrual disorders in which other forms of treatment are not advisable.

Treatment of Intraperitoneal Abscess in the Lower Abdomen.—A. Maclaren (*Jour. Amer. Med. Assoc.*, 1910, LIV, 2105) says that rectal drainage is no more dangerous than vaginal. Opening these abscesses through the rectum and draining with a winged rubber tube has given most satisfactory results in ten cases, as well as five previously reported cases of pelvic abscess following intraperitoneal operations for appendicitis. The position used is the exaggerated one usually employed in making examinations with the cystoscope. The most important part of this position is the use of straps over the shoulder, fastened to the uprights holding the feet, to prevent the shoulders from slipping away when the head of the table is dropped. A weighted vaginal speculum will expose the anterior wall of the rectum as well as it exposes the vault of the vagina in the similar operation for vaginal section. One long-bladed retractor for the anterior wall is necessary to hold the bladder out of the way. The

bladder having been catheterized to prevent accident, the rectum should be irrigated until fecal matter is removed, and then sponged out with alcohol. After the rectum has been well cleaned and the bulging anterior wall well located, the abscess should be opened with long, sharp-pointed scissors, used as a dilator. After the recto-vesical or recto-uterine pouch is opened and the fluid let out, the dilator should be kept in place until a quarter-inch, winged rubber tube can be passed well up into the cavity; then the sphincter should be dilated. Vaginal puncture is too blind and does not give sufficient room for further exploration.

Lutein Extract in Treatment of Decreased Menstruation and Premature Menopause.—E. McDonald (*Jour. Amer. Med. Assoc.*, 1910, LV, 205) has used in twenty cases a desiccated extract of corpora lutea of the ovary of cows, obtained by skinning the outside of the ovary with a sharp knife in order to obtain as much of the essential substance as possible, drying and powdering. His results seem to indicate that the control of the surgical menopause need not be sought in the corpora lutea. Its value is in cases in which the uterus and ovaries or uterus alone are retained. Particularly is it valuable in the treatment of scanty menstruation and the premature menopause. The lutein extract, being the essential part of the ovary, does seem to help in some degree, and should be accompanied in suitable cases, by dilatation of the uterus, with the use of the stem pessary following operation. At least, the administration of lutein is indicated after operations on pregnant women in whom miscarriage is feared. This is particularly true in the early weeks of pregnancy, during the embedding of the ovum, as it has been shown experimentally that the corpus luteum has a definite effect under such circumstances.

Axial Torsion of Fibromatous Uteri.—Vautrin (*Rev. de Gyn., et de Chir. abd.*, Aug., 1910) says that uteri having large fibroid tumors may become twisted on their axes, and cause sudden and violent symptoms. The rotation generally occurs at a point where the body and cervix join, which in the growth of the tumor has become thinned until it forms a sort of cord, rendered ductile by changes in the anatomical elements of the uterus. Piquand has collected eighty-four cases of this complication. Pregnancy has been given undue weight as a causal factor, since this complication occurs often when pregnancy is not present and in women who have passed the menopause. In pregnancy the softening of the uterus and relaxation of the abdominal walls render it possible. The size and seat, development of the fibroma is of importance. By the fibroma the uterus is drawn up and elongated, the junction of body and cervix being thinned. If torsion occurs during pregnancy it is in the early months. According to others the position and the formation of the surfaces of the abdomen against which the tumor rests after it has risen out of the pelvis cause it to twist on its axis usually from left to right. The cavity of the uterus becomes diminished in size

until it is obliterated and the vessels decrease in size. The muscle rarifies and disappears, and then the mucosa is destroyed by compression. When torsion occurs, edema increases the size of the tumor. The venous stasis may go on rapidly to gangrene, localized necrosis, and cyst formation. The position of bladder, rectum, and colon will be altered, if they are adherent to the uterus. Hematometra or pyometra may occur. The torsion may come on acutely with intense pain and symptoms of collapse, going rapidly on to gangrene or death from sepsis. It may come on much more slowly, and after a few days there may be a period of calm. Finally, there is a very slow form coming on with few symptoms. In these cases palpation is the most valuable means of diagnosis. The prognosis is always bad, and operation must be done sooner or later. In young women laparotomy with removal of the fibroid and reduction of the displacement may be done. In women past the menopause the best procedure is to remove uterus, adnexa, and tumor at once.

Treatment of 375 Patients with the Ehrlich-Hata Preparation.—R. Sieskind (*Münch. Med. Woch.*, Sept. 27, 1910) reports the treatment of 375 cases of obstinate syphilis with "606," at the Virchow Hospital in Berlin. In cases where mercury fails this preparation succeeds. A single injection of arsenobenzol will do what eight to ten injections of mercurial salts or a five or six weeks' inunction cure will do. The patient need stay in the hospital only from six to sixteen days. The treatment is appropriate to many social conditions on account of the short stay necessary, the short absence from business, and the less inconveniences of treatment. For those who can take the treatment outside the hospital the danger of prostitution is prevented, and the treatment is shortened, it not being necessary to be tied to one's physician for many months or years. Among the patients treated were to be seen the severest and most obstinate forms of syphilis, precocious and malignant forms, and early scleroses. The author has as yet seen no malignant syphilis that has resisted "606." The picture changes so quickly that it is impossible to believe one's eyes. All syphilitic eruptions and mucous patches vanish quickly; the initial lesion often heals in forty-eight hours. If we treat the initial lesion with excision or hot air we destroy a large number of the spirochetes, and the remainder are more easily treated. Gangrenous initial lesions, resulting from mixed infections, are rapidly affected. Pustular eruptions, and hyperkeratoses are rapidly absorbed. In papular syphilides a second injection may be needed. Bone affections and eye troubles are equally well affected. Where there has been destruction of nerve substance the use of 606 is contraindicated. In a case of atypical tabes the pains disappeared and ataxia was improved. Swelling of glands and anemia are all benefited. In hereditary syphilis parenchymatous keratitis is not well influenced by "606". The drug is free from the bad effects of atoxyl on the nerve of sight. A marked leukocytosis is

brought about by it. Indications are malignant and early ulcerative cases refractory to mercury; cases in which mercury is not well borne; cases of recurrence in spite of mercury; early cases, in which it may be combined with excision of the initial lesion; tubercular cases combined with syphilis; visceral syphilis; epilepsy, old persons with healthy heart, kidneys, and eyes; latent syphilis in which the Wassermann reaction is present in spite of treatment; parasyphilitic affections in their early stages. Contraindications are severe affections of the optic nerve and retina; heart and nerve affections; severe non-tuberculous lung affections; late degenerative nervous troubles; serious kidney disease; angina and feverish conditions. The addition of methyl alcohol and phenolphthalein has made the injections painless; they were given subcutaneously. In 10 per cent. of cases a reaction occurred in three or four days, with fever, infiltration at the site of injection, in a few cases suppuration. Intravenous injections are to be used only in cases of great obesity, or severe edema. The dose used was from 0.45 to 0.60. If the spirochetes are not swollen and motionless in twenty-four to forty-eight hours a too small dose has been given. Of the 375 cases forty-four have been followed up; of these there have been eight recurrences, four while still in the hospital, one in eight days, two in a month, and one in two months. After a second injection no recurrence has been observed. Whether we can get permanent cures remains to be told after the use of this method for some years.

Treatment of Salpingoophoritis, based on Personal Observation of 130 Cases.—De Rouville (*La Gyn.*, Sept., 1910) bases his opinions of the proper treatment of salpingoophoritis on the treatment of 130 cases of this condition. Most chronic cases have pain, and constitute a permanent infirmity. In poor patients non-operative treatment takes so long as to be undesirable. Such cases improve under treatment, but come back later for operation. Only total ablation gives a certainty of permanent cure. The author has given up ignipuncture of the ovary, since he has had to reopen the abdomen later, in eight cases to remove the ovary. Obliteration of a tube necessitates removal of the ovary. In case of bilateral lesions there is nothing to do but remove everything. The author is a partisan of the vaginal route.

Treatment of Inoperable Cancer of the Cervix and Vagina with Radium.—H. Cheron and H. Rubens-Duval (*L'Obstét.*, Sept., 1901) say that by the ordinary use of radium in inoperable cancer of the cervix marked relief of the functional symptoms, sedation of pain, arrest of hemorrhages and of leucorrhea are obtained, but the growth goes on infiltrating. The authors increased the quantity of radium used. They found that the mucosa of the cervicovaginal region could bear a strong application of radium; that the application is more effective when strength is increased than when the time of application is lengthened. They call their method that of massive doses, and consider

this absolutely indispensable in uterine and vaginal cancers. If the cervix is dilatable the tubes should be placed within the canal at first, because we thus act on the center of the neoplasm, and nearer to the broad ligament where the cancer especially infiltrates, and these regions will later become inaccessible. As soon as the cancer is improved it is transformed into a mass of sclerosed tissue into which the tubes cannot penetrate. We must profit by the initial permeability of the canal. Dominici's tubes should be used. These are so constructed as to allow only the soft rays to penetrate. The tube is enveloped in fifteen thicknesses of gauze before introduction. Secondary radiation is not interrupted by this gauze. The application is made with all aseptic precautions. The tubes may remain in place twenty-four hours if necessary. If the cervical canal cannot be dilated an artificial canal is made with a bistoury, into which the tubes are introduced. If smaller doses are used the improvement is only temporary. There is a selective action of the radium on the neoplastic elements. Some cells undergo necrosis, others become sclerotic. As long as lateral infiltration in the culs-de-sac remains moderate we may undertake radium treatment with hope of success.

DEPARTMENT OF PEDIATRICS.

ORIGINAL COMMUNICATIONS.

THE POSSIBILITIES OF MATERNAL NURSING IN THE PREVENTION OF INFANT MORTALITY.*

BY
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WHILE many measures for the ultimate reduction of infant mortality which cannot be expected to bear fruit in the immediate future, must be discussed at these sessions, it is my good fortune to deal with a measure which has a daily and even hourly application if a larger number of babies born are to survive their first year of life.

In presenting my subject, three questions naturally arise:

What advantages has maternal nursing?

Why is it less common than formerly?

How may it be encouraged and made successful?

Were this audience made up entirely of medical men, and not in a large part of laymen earnestly intent upon the solution of this serious problem, it would be unnecessary for me to restate the well-known fact that competent maternal nursing offers the new-born infant the best chance of survival. In support of this I must state certain other accepted truths, namely, that as before birth, so after birth, there is a physiological dependence of the infant upon its mother which does not cease until the infant has made considerable progress in the extrauterine phase of its existence. The breast milk of the mother, being expressly adapted by nature to the peculiar needs of the human infant, stimulates its digestive processes, is digested and absorbed with less effort and waste, favors more immediate and well-rounded growth, and contains certain principles apparently not present in other milks—some of them of a protective nature, which render the nursing infant practically immune to various infectious diseases.

*Read at the Baltimore meeting of the American Association for Study and Prevention of Infant Mortality, November 11, 1910.

The influence of maternal nursing does not, however, stop here. No statistics of infant mortality give us any real clues to the full influence of breast-feeding, unless the deaths of infants from all causes are separated upon the fundamental lines of whether they were nursed or whether they were bottle-fed. Physicians know, and have known for a long time, that a vastly greater proportion of bottle-fed infants die of malnutrition, summer diarrhea, and other gastrointestinal disorders; but the public at least do not appreciate that a host of deaths ascribed to pneumonia, convulsions, diphtheria, measles, whooping-cough, suppurative affections—and, in fact, nearly the whole gamut of infantile diseases—take place because these infants lack the stamina and recuperative power possessed in much greater degree by infants who have been nourished at the breast. These deaths are rarely traced to the really important contributory cause. Add to this mortality in infancy, the starved bodies, the stunted development, the narrow rachitic chests, the anemia and disturbed digestions which the less fortunate of the survivors carry with them into childhood, and it becomes apparent that the morbidity of bottle-feeding must play some part also in the mortality of later years.

Nevertheless, artificial feeding is on the increase and breast-feeding is decreasing. Two factors more than others contribute to this popularity of artificial feeding. The first of these is the progress made in the improvement of the milk supply, and more especially in the methods of its preparation for bottle-feeding. Both have been of undoubted service in lessening infant morbidity and mortality where the use of cows' milk was imperative, but we should not overlook the fact that in many quarters this popularization has created an unwarranted confidence. This has taken the form of a belief that an infant may be as satisfactorily and as safely fed upon the bottle as upon the breast.

Still more unfortunate in its bearing upon maternal nursing has been the influence of the so-called "infant foods." Valuable as some of these are when limited to their proper sphere as aids in the feeding of infants who cannot be nursed, and granting that by their use infants who have previously been ignorantly or injudiciously fed are at times enabled to make better progress, we regret that the commercial exploiters of such products have not hesitated in their literature and advertisements to create the impression that such feeding equals, or even exceeds, the value of breast milk. When hundreds of thousands of dollars have

been spent in promoting the use of infant foods and scarcely as many mills in promoting the knowledge of the value of breast milk, it is not surprising that the same public which buys a soap, a baking powder, or a breakfast food on the strength of lavish advertising will come to believe that some particular infant food possesses almost miraculous properties and guarantees to the infant health and development not surpassed by maternal nursing.

Granting that much has been accomplished of late years in the scientific adaptation of cows' milk and artificial food products to the bottle-feeding of infants, and granting that the best results are obtained only when there is a high degree of intelligence on the part of the mother and close observation and direction by a skilful physician, the fact remains that no perfect substitute for breast milk has been, or in the nature of things can be, devised by art. Of any two considerable groups of infants—the one group nursed at the breast and the other fed upon the bottle—there will always be better development, less illness, and fewer deaths among the nursed infants. If these facts were placed clearly before every mother in the land, so that she could not escape the knowledge that in putting her infant upon the bottle she was electing to take much greater chances of illness and death, there would seem to be little doubt that the number of mothers who would endeavor to nurse their infants would be considerably increased.

Salutary as such a movement might be, it would not wholly solve our problem. Seen from the standpoint of the thoughtful medical investigator, more important questions lie beneath the surface. The people of our country may, for our present purposes, be divided roughly into several groups:

1. The ultrasocial group.
2. The educated classes of means, large or small.
3. The great middle classes, including well paid artisans.
4. The very poor and the ignorant, including the foreign immigrants.

Conditions for successful nursing vary widely in these groups. Good food, comfortable homes, and a reasonable freedom from worry, though not always essential, have a desirable influence. Unfortunately, however, education and successful nursing do not always go hand in hand. We sometimes find that it is the stolid ignorant mother who is best able to nurse her baby, and the educated and intelligent one who has the most difficulty.

Among both laymen and physicians the opinion has until recently prevailed that many mothers refused to nurse their children because they were unwilling to give up social pleasures and devote themselves to their offspring. This may have been true some years ago, but obstetric physicians agree that such instances are less numerous to-day—possibly because of a larger knowledge of matters pertaining to children among the intelligent classes. In any event, such women are in very small minority among the women of this country and would be negligible as a factor in this discussion were it not for their prominence in the public eye and the possible effect of their example. Moreover, in consequence of ample means, skilful nurses, and expert medical attention, the limited number of such bottle-fed children shows less mortality than in other ranks of life.

Having disposed, to some extent, of this charge of wilful refusal to nurse, the question is still unanswered why so many mothers, who are both willing and anxious to do so, do not nurse their infants. A number of these cannot or should not nurse their babies. Among those who should not, are mothers with active pulmonary tuberculosis, advanced diseases of the kidneys, insanity, severe epilepsy, some abscesses of the breast, and puerperal fever. Prolonged febrile conditions lead to loss of milk and relieve us of any choice in the matter.

Under proper management, however, the vast majority of other mothers whose children are bottle-fed, upon various pleas of the mothers' ill health, would be definitely benefited rather than injured by performing their natural function. While extremely neurotic mothers do not secrete the best of breast milk, a ridiculous number of women are excused or restrained from fulfilling their maternal duties upon this and other insufficient grounds.

Another small proportion of mothers cannot nurse because of actual insufficient mammary development, or of malformed and depressed nipples. While the prevention of these conditions is to be sought in better hygienic and physical care of the rising generation of potential mothers, the number of the former class is unquestionably smaller than it now appears, and more of the latter could nurse if they really received intelligent and skilful care both before and after the birth of the child.

Yet the classes of mothers hitherto mentioned—even if we add to them those who from shame abandon their babies and those who are obliged to give them over to the bottle in order to earn

their daily bread—do not, when taken altogether, constitute any large majority of those who do not nurse their babies, or else wean them in the first weeks of life. What then, of the large remainder? As the result of an earnest inquiry into all cases coming under my observation, I am prepared to affirm that it is chiefly due to general and lamentable ignorance of the whole subject of human lactation. Astounding as it may seem, I am convinced that as many infants are removed unnecessarily from the breast as there are those whose mothers are actually unable to nurse them. No function of the human body has received, in all its important relations, so little study as that of the secretion of milk by the breast. Even collateral information and methods offered by much more extensive study of certain of the lower animals, have not been generally accepted or applied to breast-feeding.

The human race has always taken it for granted that a woman either could nurse her infant or could not. There was no middle ground. Milk either came into the breasts abundantly and was good, or it came in scantily and was useless. There have been no profound studies of the important possibilities of making a seemingly scanty milk good and abundant. Since scanty milk was assumed to be bad or useless, it has been the rule—and is to-day in many quarters—to discard it entirely as soon as the infant seemed to show by its behavior that the quantity or quality was not sufficient. Circumstances, or some temporary indisposition of the mother, often cause a sudden diminution in the milk, and no proper measures are instituted to restore it. Thousand of babies are weaned each year on the plea that the mother's milk is bad or insufficient, when a little common-sense investigation would result in the discovery that such is not the case. Almost any abnormality in the behavior of the infant, almost any apparent abnormality in its stools, is seized upon as sufficient reason for inaugurating bottle-feeding. Unfortunately, many of the criteria upon which such judgments are pronounced have no scientific basis, and upon careful investigation would be found to be fallacious.

No claim is made that every mother can nurse her child, but that many more can do so than has been thought possible in the past. Under no other form of feeding do so many new-born infants make so favorable a start in life, and while some supplementary feeding may at times be helpful, the breast should not be abandoned until at least two weeks of effort have been given

to intelligent attempts to build up the mother and increase her supply of milk. Short of that time many infants have not learned to nurse properly nor to extract all that is possible from the breast. Regular stimulation of the breasts by the infant also causes them to respond to the increasing demand. Scanty milk often results in stools which look bad. This is no sign that the milk disagrees, for on giving additional food with the breast, the stools become normal. Even when the milk is scanty or of poor quality, it is exceptional for it to be bad, and it is only rational that, when the mother is below par, attention to her health and diet should improve the secretion of her breasts.

Successful as such methods, when properly applied, have proved to be, it is not always possible to make the quantity meet the full needs of the infant. What should we do under such circumstances?

Those who stop to think will realize that even partial breast-feeding favors an undisturbed digestion in the infant and a safer and more continuous development. Yet many a mother whose milk could readily be made to assist in the early nutrition of her infant is ignorantly advised or allowed to discard it for the greater uncertainties of total bottle-feeding. The forces which are behind this organization can do much, not only to forward a campaign of education concerning the advantages of breast milk, but also to foster studies which should make it even more possible in the future for the willing mother to continue nursing her infant.

Where, then, does the responsibility rest for the ignorance concerning lactation. Aside from the deficiencies in medical education, it rests first with the State, which spends thousands of dollars in experiments to improve the feeding and lactation of cows, but whose scientists, best equipped by their training to give us further light upon human milk, tell us regretfully that there is no appropriation for such purposes. It rests with the hospitals for mothers and infants, in which the material and the opportunities for such studies are always present. In many of these institutions the dietary is not selected or regulated with any special reference to the needs of the nursing mothers. Similar methods on a dairy farm would mean financial loss, or possible bankruptcy for the farmers. These women are there primarily to furnish milk to their babies. The diet of a nursing mother is certainly entitled to as much thought as would be bestowed on that of a cow. Many of these women, if properly fed, would be

capable of furnishing enough milk to safeguard the life of another infant beside their own. This should be required of them, when possible, since they themselves are receiving the benefit of public or private charity.

That puny infants suffering from malnutrition may often be saved by such temporary wet nursing is so well recognized as to need no argument. If this be true of infants who have been born at full term, it is even more imperative that feeble infants, born prematurely, should receive breast milk if any reasonable proportion of them are to survive. Yet there are many institutions equipped with incubators, which regularly receive such babies, but whose routine reliance upon artificial feeding and the failure to provide wet nurses results in an excessively high mortality.

There is an incalculable loss to the community if the methods of our hospitals do not offer object lessons of the most approved ways of caring for the nursing mothers and the infant inmates. The medical graduates who, in constant succession, serve as internes in these hospitals will in the future care for many babies in their private practices. We cannot blame them if they continue to use the only measures with which they have had the opportunity to become familiar during their hospital days.

The responsibility also rests upon the educator. Popular education should be approximated to the prospective needs of the scholars. Each rising generation of young women should acquire some of the fundamental principles of the care of infants, which eight out of ten of them will certainly require, either for their own children or for those of others. A blind and prudish optimism should not decree that our daughters shall assume the grave responsibilities of maternity almost without previous instruction.

In such work as is being done to correct these blunders of the centuries, the physicians must be the leaders, but the laymen have no less important responsibility. Let us hope that the day is not far distant when fewer breasts which were intended to suckle shall be wantonly dried through ignorance of the value of breast milk or of the means of maintaining it as a part, if not the whole, of the infant's nourishment.

INTUSSUSCEPTION IN INFANTS.¹

BY

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(With two illustrations.)

UPON looking over the transactions of our Society, since its inception, I find there have been but two papers published upon this important subject, and those were contributed by Dr. Henry Howitt of Guelph, Ontario, in 1894 and 1898. Dr. Robert T. Morris of New York, also gave, in 1898, a demonstration upon the production of intussusception in rabbits by applying a little carbonate of soda to the exposed ileum. It seems strange that an association of active workers, and many of them general surgeons connected with hospitals, which have a large children's department, should have seen so little of this terrible malady, and could have passed by unrecognized its sudden and dramatic symptomatology.

I believe, with other reporters in this field of work, that this condition is not uncommon but, coming, as it does, in young infants who are so frequently the subjects of gastroenteritis and ileocolitis, the symptoms are often wrongly attributed to these diseases. However, when once seen and diagnosed by the intelligent medical practitioner, the picture is not easily forgotten, and so impressed is he with his first case that he very soon finds others. This fact has been demonstrated in the experience of many surgeons, as it was with Dr. Howitt who reported seven cases, three of which came from the same medical man. My case came to me from Dr. Nelson G. Russell who diagnosed a second one inside of six months, and both were successfully operated.

It is interesting to study the surgical evolution of this subject. Intussusception in infants was recognized and accurately described even in ancient medical literature and, quoting from Clubbe's monograph, "The clear and minute description of the mechanism and anatomy of intussusception by John Hunter could hardly be improved upon at the present day," yet it remained for Mr. A. A. Barker, in a paper in 1888, to first put the treatment of this subject on a rational basis.

¹ Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

Mr. Johnathan Hutchinson operated successfully a case in 1871, and yet in 1892 Mr. Hutchinson says, in an article published in the *Archives of Surgery*, London, vol. iv, "If the patient be an infant, say under two years of age, it will be well to be content with repeated attempts by injection. The results of laparotomy in infants have been so almost invariably fatal that it is safer to trust to other measures." Yet Clubbe, in his 1908 edition, Introductory Chapter on Intussusception, says that he personally has operated upon 120 cases, with forty deaths, a mortality of 32.2 per cent. In the last twenty-four cases he had only three deaths, a mortality of 12.5 per cent., and I have recently seen a note in one of our medical journals that his last series was still more encouraging, owing to a better knowledge of the subject in his territory by the medical man, an earlier diagnosis, and an increased confidence in the brilliant achievements of modern surgery.

The most frequent spot for an intussusception is in the cecum, at the caput ceci, or in the ileum, a few inches above the cecum; but it can take place in any portion of the intestinal tract, from the duodenum to the rectum. Many different classifications are made, but these divisions are of more pathological than clinical interest, since it is impossible to make a diagnosis of the exact type from any special signs or symptoms which ordinarily present themselves, or even upon inspection, until the mass is reduced.

The ileocecal and the ileocolic are the types which concern us most, since they occur most frequently in infancy, are very acute in their development, involve quite often a very large section of bowel, and are rapidly fatal, from the completeness of the bowel obstruction. The ileocecal occurs at the ileocecal valve and the valve is found to occupy the apex or lowest point of the intussusceptum; sometimes within a few hours the greater portion of the colon is involved and the apex of the tumor appears at the anus. The ileocolic resembles the ileocecal and is frequently confounded with it. It differs in having a few inches of the lower end of the ileum invaginated through the ileocecal valve, but in a few hours, owing to the tenesmic efforts induced, the cecum is forced into the colon and its after-course exactly resembles that of the ileocecal (Howitt).

The colic and the enteric forms are not very acute, and seldom produce complete obstruction, because they involve only a small portion of the bowel.

There are many explanations offered as a cause for this interesting pathology. D'Arcy Power believes that it is mostly the result of anatomical conditions, and occurs when the colon is considerably larger than the ileum and when it is unduly moveable, owing to a long, lax mesentery. Others believe that the exciting factor is more physiological and is the result of some irritation of the bowel wall which causes a spasm of its circular fibers which reduces at that point the lumen of the gut, and then the small area is forced on by the powerful contractions of the longitudinal bands, until an invagination is produced. Nothnagel says, "While the bowel is performing normal peristaltic movements, an annular and strictly local constriction of the bowels happens to occur. This constriction may be greater than normal and so pronounced that the limit of physiologic invagination is exceeded, and the first degree of pathologic intussusception develops."

Morris suggests, and upon these same grounds, that the toxalbumins and ptomains consequent upon bowel fermentation and decomposition may suddenly irritate the circular muscle-tissue fibers and bring on a violent spasm, as was invariably produced experimentally upon the exposed ileum in twenty to forty seconds after the application of a few grains of carbonate of soda.

The diagnosis should be easily made if one is careful to elicit the very definite history which always attends one of these sudden outbreaks. Given, a baby who may have been previously quite well or had suffered from some bowel disturbance who, upon awakening from sleep, or after nursing, is suddenly seized with acute pain, screams and cries out, draws up its little legs, turns pale and vomits, and in a few hours passes blood, you can be morally certain of an intussusception (Clubbe). The screaming does not last long and afterward the child whines and cries occasionally from the colicky pains. A reaction soon sets in, so that the baby looks very well, and the attendant and family can hardly believe in the possible existence of such a serious affliction. Soon after the first scream the child may have one or two natural movements, but in from two to ten hours, in 97 per cent. of all cases, blood will be passed per rectum.

Often, very early in the disease, one can feel a tumor or swelling high up across the median line or along the left of the navel, and if the finger is inserted in the rectum, blood and mucus will come away on it. No doubt, too much dependence has been

placed upon the palpable existence of a tumor or sausage-shaped swelling, because in over 50 per cent. of the cases operated upon by Erdmann, no tumor could be felt; even when the abdomen was opened the mass lay so high up under the right and left costal cartilages that the swelling could not be made out by any external palpation. If the case has advanced some hours, the tumor may be large, and then it sometimes can be felt through the rectum by the examining finger, or it may even point at the anus. Chloroform should always be given in making the examination if there be any question of doubt in a diagnosis, because when the child cries and screams and makes its abdominal walls tense a proper examination cannot be made, and furthermore, it is so important to completely establish a diagnosis at the first visit that a necessarily fatal illness may be changed to a reasonably benign one by timely interference. It is surprising to see how young children, even in the early months of life, bear these surgical procedures if not worn out by the suffering and the rapidly developing toxemia associated with this bowel obstruction.

The only condition that an acute intussusception can be confounded with is an acute colitis in cases where the mesocolon is thickened and feels very much like the intussusception tumor. The onset in both is acute, but in intussusception, after a few hours, the obstruction is complete and only foul-smelling blood and slime is passed, whereas in colitis there are frequent motions of feces mixed with the blood and slime. The mass is also larger in colitis, but it can never be felt through the rectum (Clubbe).

Occasionally in an incomplete intussusception, as reported in two instances by Erdmann, where no blood was passed, and only a little mucus came away, the diagnosis would be very difficult and open to doubt.

The treatment of this condition is surgical and, many of our best, most skilful, and most competent men never even attempt any other method of treatment. Mr. E. Owen, of the Children's Hospital, London, says: "I deem it nothing less than a calamity that physicians every now and then manage to chase back an intussuscepted piece of bowel by using an enema."

Mr. Clubbe, who has had such an unusual experience in the treatment of this disease, places the little patient on the operating-table and prepares for an operation. Chloroform is given and an injection of about 16 ounces of olive oil or salt solution is

made into the rectum, and only if every bit of the tumor disappears he sends the patient back to the ward; but if, in six hours, there is the slightest return of a swelling, or any of the symptoms of the disease, he operates at once. He says he has been successful in reducing only 14 out of 138 cases, 10.8 per cent. If in the hands of such a skilful diagnostician, and such an experienced and astute observer, the irrigation treatment effects a cure so seldom, then this treatment has deservedly fallen into ill favor.

Erdmann who has also had a large experience, having operated upon forty-seven cases of all varieties and with all kinds of complications, condemns the irrigation as impractical and too uncertain. Evidently the risks of failure, with reduction by irrigation and insufflation, are so frequent and the possibilities of error in assuming a reduction to have taken place are so great and the manifestly dangerous complications that result from a few hours' delay so imminent that an operation becomes imperative just as soon as a diagnosis can be made. However, most surgeons agree that an injection should be given at the time of operation, not in the hope of effecting a complete reduction of the invagination, but with the object of reducing some of it, so that the subsequent manipulations when the abdomen is opened are more easily accomplished, because, in many cases, when the intussusceptum has engaged a large part of the transverse and even the descending colon, it is exceedingly difficult to reduce it without this preliminary irrigation, as the injection usually replaces some of the mass from its intussuscipiens, or sheath.

An incision about 2 1/2 inches in length is usually made on the side where the tumor is most prominent along the border of the rectus or, perhaps best, in the median line, because it is easiest done and there is no bleeding, no vessels or nerves of importance being severed and, as a rule, the reduction is satisfactorily accomplished through this locality. If the tumor can be picked up and the invaginated part reduced, the bowels being retained in the abdominal cavity with gauze pads, this is always done; but sooner than waste any time by trying to hold the bowels back and fruitlessly grabbing a piece here and there, I think it best at once to eviscerate, believing that the dangers of exposing the bowels is infinitely less than the added shock which results from the ineffectual, unnecessary, and awkward handling of the bowels within the peritoneal cavity. The tumor

is lifted up and gentle pressure is made from below, at the apex of the swelling, between the thumb and fingers, when the inclosed mass usually slips back. No traction, or at least only the slightest amount, is ever made on the entering bowel. The bowel should then be stroked or gently stripped along its natural course for a few inches, to make sure that the reduction is complete and to help on the fecal current and its toxins.

If the case is not recent, the swelling of the inner cylinder is so great that reduction is often impossible, not from adhesions which Clubbe maintains seldom have time to form, but from the blood stasis and infiltration of the parts with serum and exudates. Here a resection of the part is often necessary, but unfortunately it is nearly always a fatal procedure. Sometimes the bowel, here and there, gives way during the efforts at reduction, and a number of superficial tears take place. These should be sewed up with fine catgut sutures. Often the bowels are so distended with gas that they cannot be pushed back into the belly cavity, and occasionally it may be necessary to make a small incision into one of them to effect reduction. However, it is surprising to see how easily these distended coils can be returned if the edges of the incision are hooked up by a tenaculum forceps, one on each side, and the little one be lifted up from the table from these two points while the assistant, with soft gauze pads, gently pushes the bowels back. Salt solution and warm pads are used frequently throughout these manipulations, the omentum is pulled into position and, finally, the wound is closed with through-and-through silkworm sutures, a collodion dressing is applied, then gauze and binder.

It is well, before closing the abdomen, to pass the fingers about in various directions to be certain that a second intussusception has not been overlooked, since multiple invaginations are not infrequent. A little morphia, $1/100$ to $1/50$ of a grain, occasionally should be given, or small doses of paregoric if the stomach will bear it, to quiet pain and bowel peristalsis and to relieve shock; also such medicines and stimulation as may be expedient. When the vomiting has subsided, a little albumen water can be taken and the child can be given the breast, or some suitable and properly diluted food.

The history of my case is as follows: Margaret W., age three months, three weeks and three days, was operated on September 20, 1909, at 11.30 A. M., about twelve to fourteen hours after the onset of the trouble. The history is classical. She was a partly

breast- and partly bottle-fed baby and had been under the care of Dr. Nelson G. Russell who had prescribed various combinations of foods, because of the colicky condition always complained of. On the 19th of September, 1909, about 11 P. M., the mother telephoned him that the baby had awakened in terrible pain and was screaming as if in agony. As the family lived some miles from the doctor's office, and as he had changed the food that day, he naturally thought the attack was like many previous ones, and he was content to prescribe a dose of castor oil



FIG. 1.

and paregoric. On the following morning he made an early visit and at once diagnosed intussusception.

I saw the baby with him about 11 o'clock; she was lying on the bed, awake, with her thumb in her mouth and evidently not in any great distress, but occasionally she winced and cried out as if suffering from colic. There was no fever, nor distention, but upon palpating the left side of the abdomen high up above and to the left of the navel a distinct tumor could

be felt; although none could be made out per rectum, yet blood and slime came away upon the examining finger. An injection of oil was given into the rectum, the abdomen gently kneaded, and the little one was rushed at once by motor car to the German Hospital. Chloroform was administered and then an incision was made along the left of the navel, about 2 1/2 inches in length.

On opening the peritoneal cavity considerable clear fluid ran out. The tumor was at once seen and an attempt was made to



FIG. 2.

reduce it within the belly cavity. In a very few minutes it was evident that this could not be effected, so the bowels were eviscerated, the swelling taken in the hand and pressure exerted from below up. It was some little time before it began to recede, and then only after the finger was slipped into the neck and a gentle stretching exerted on the tight ring. It proved to be of the ileocecal variety, commencing about 3 inches above the cecum and had engaged at least 7 inches of the colon. The inner cylinder, when released, was of a dark maroon color, but the shining peritoneal luster was still present. The appendix was long, very dark, and was in the mass, but it was not removed.

The mesentery gave way at a few points in the reduction and a stitch or two of fine catgut was inserted at these spots; the bowels were then returned into the belly cavity with some effort, the omentum was pulled over them, and the wound was quickly closed with through-and-through silkworm sutures, colodion was applied, and then gauze straps and binder.

The baby reacted beautifully, and in sixteen hours had a fecal movement mixed with some blood and slime. Salt infusion, one ounce, was injected into the rectum every two hours, and about 1/100 of a grain of morphine was injected hypodermically every third hour. She slept and rested nicely; was given distilled water frequently; then a little albumin water, and then food diluted in small quantities and often. She left the hospital on the ninth day. Dr. Russell assumed the medical management after the operation, and my nephew, Dr. Charles Gordon Heyd, assisted me in the surgical work.

In closing this subject I may say that I am not surprised that many mistakes are made in diagnosis, not alone from carelessness, but really from want of knowledge, since the average medical graduate never heard a lecture on this important subject and never saw a case during his student years. He is naturally content to call every case, where blood and mucus is discharged from the bowels as acute bloody dysentery and signs a death certificate in forty-eight or seventy-two hours, attributing it to convulsions, or acute colitis, or acute dysentery. Surgeons must report their experiences with this rapidly fatal and yet easily curable affection in the medical journals, also discuss the subject more freely before state and local societies in the hope that a more general knowledge may be disseminated among the rank and file of the busy, practising doctors. They see these little sufferers first and most often, and if they make a quick diagnosis an early operation will cure 95 per cent. or more of those suffering from this disastrous and rapidly fatal disease. Contrast the terrible mortality of appendicitis and extrauterine pregnancy of twenty-five years ago, under medical treatment, with the splendid results of to-day, due in no small measure to the work and teachings of this Association, and we must not rest content until the same claim can be made for intussusception in infants.

DIAGNOSIS AND TREATMENT OF PNEUMONIA IN INFANCY AND CHILDHOOD.

BY

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It is well known that primary lobar pneumonia occurring in a previously healthy child is one of the least fatal of the serious infections. In infancy the prognosis is not so bright. Not a few infants die of primary pneumonia in the second year. In the first year of life pneumonia is a grave disease. Feer, in Pfaundler and Schlossman's system says that about one-half of the pneumonias of the first year are fatal.

The importance of early diagnosis and prompt treatment is thus apparent.

It was formerly believed that lobar pneumonia very seldom occurred in infancy. Holt and others have long ago shown this belief to be erroneous. Lobar pneumonia is common in the second year of life and far from rare in the first year.

Diagnosis.—When the classical physical signs are present, diagnosis is, of course, easy. Unfortunately, instead of showing on the second or third day, these signs are often delayed until the fourth or fifth or even the sixth day. Holt mentions a case where they did not appear until the fourteenth day. In such cases it is necessary to make a diagnosis without any aid from examination of the lungs, otherwise our patient may be well or dead before we have found out what ailed him.

On what grounds are we justified in making a tentative diagnosis of pneumonia? When in a child previously well or who perhaps has had an influenza for a few days, we get a history of a sudden attack, usually with vomiting, sometimes with vomiting and diarrhea, sometimes in infants with a convulsion, rarely with a chill except in the older children, and on the second day the temperature is high all day, respiration and pulse quick, but the respiration-pulse ratio 1 to 3 or 2 $1/2$ and without any acute abdominal distention to explain the change in ratio, we can be reasonably sure of what we have to deal with. A little moan or grunt with each expiration is very characteristic and adds

much to the certainty of the diagnosis. The expiratory grunt is not always present, and if present it may only be noticeable when the child is moved or disturbed in some way. A red area on one cheek is confirmatory. A hacking cough may or may not be present. In infants there is often no pain in the chest, but it is common in older children. Frequently the pain is referred to the epigastrium or lower down on either side of the abdomen. Cerebral symptoms may or may not present themselves. On the third or fourth day facial herpes may help settle the diagnosis, but not very often in infants. A well-marked leukocytosis will usually be found from the beginning. In an infant there may be a respiration-pulse ratio of 1 to 2 without very noticeable dyspnea, and consequently this change of ratio is easily overlooked unless one makes it a rule to count the respirations in every case of doubtful character.

When the physical signs do make themselves apparent an area of feeble breathing with slight dullness or a sense of increased resistance is apt to be the first change. Bronchial voice and breathing generally antedate any marked change in the percussion note. The percussion note instead of becoming dull may have a tympanitic quality. The sense of increased resistance on percussion is often easier of recognition than a change in the percussion note. Increased vocal fremitus, if present, and fine râles complete the picture in infants. Real crepitant râles are usually heard in children, but are not common in infancy. Unless the patient is at least seven or eight years old there will probably be no expectoration.

The cerebral type of pneumonia must be kept in mind to prevent a mistaken diagnosis of meningitis. Two forms are described, the eclamptic which usually occurs in infants and is characterized by repeated convulsions, apathy or stupor and rigidity of the neck; and the meningeal form which is more common in older children and produces headache, vomiting, delirium, coma and rigidity of the neck, but not the slow pulse of meningitis.

Whether these cerebral cases are more common in apical pneumonia is uncertain. Otitis media is said to be relatively common and may account for the symptoms in some instances.

In the so-called abdominal type the vomiting and abdominal pain are so prominent that they obscure the chest symptoms. An error may result simply from the fact that the question of pneumonia is not considered. Thorough examination of the respiratory apparatus will at least suggest pneumonia and the

absence of localized rigidity of the muscles in the region of the appendix will exclude appendicitis.

It must not be forgotten that any abdominal disturbance producing pain and acute distention will simulate pneumonia to the extent of changing the respiration-pulse ratio.

The scope of this paper does not permit extended discussion of the question of differential diagnosis. Pleurisy with serous effusion of considerable amount is very rare in infants and young children. The onset is less acute and the temperature not a high continuous one. The well-known physical signs will usually serve to differentiate it, but if not, we must use the aspirating needle.

Primary purulent pleurisy is more common and more difficult to diagnose because the onset and symptoms may closely resemble those of pneumonia. If the amount of pus is rather small and is spread over a large surface of lung, as often happens, the bronchial signs and râles are very distinctly transmitted, even to the base of the chest. Also the percussion note is often tympanic. Here again the aspirating needle must be used.

Empyema complicating pneumonia or following it is much more common than primary empyema. Tuberculosis may cause a lobar pneumonia the character of which is only demonstrable by examination of the sputum or by a tubercular vaccination. A consolidation that involves the whole of one lobe with the contiguous part of another lobe or that involves the contiguous portions of two lobes is suggestive of tuberculous origin.

Lobar pneumonia as a complication of other diseases:

Except with influenza it is not apt to have the characteristic onset of the primary form. An increased elevation of temperature with more rapid breathing and pulse, especially if accompanied by cough or pain in the side, would naturally suggest pneumonia.

Abortive Pneumonia.—When we come to consider these cases it is necessary to decide what we mean by lobar pneumonia. The correct conception seems to me to be that of a systemic infection that includes an inflammation of the lung. There can be no doubt that a lobar pneumonia occasionally runs its clinical course in three days, possibly even in two days. Attacks beginning like pneumonia but running their entire course (including the disappearance of whatever slight or obscure physical signs may have been present) in twenty-four or forty-eight hours do not seem to come up to specifications. It has been shown that

pneumococci are present in the blood in most cases of primary lobar pneumonia, but the same has not to my knowledge been demonstrated in the above-mentioned class of cases, and even if it had it would only prove them to be cases of pneumococcic infection. It has yet to be shown that pneumococcemia occurs only in pneumonia. The old term, acute congestion of the lungs, seems preferable to abortive pneumonia in cases that show no positive evidence of consolidation of the lungs.

Bronchopneumonia.—Diagnosis.—It occurs principally during the first three years of life. There is a marked difference between the primary and secondary forms. According to Holt about one-third of the cases are primary. Secondary cases complicate a wide variety of diseases. Aspiration pneumonias are usually of the bronchopneumonic type. Primary bronchopneumonia in its onset approaches lobar pneumonia more or less closely and is often due to the pneumococcus alone. It is regularly preceded by a bronchitis.

The temperature is high and may be continuously high and end by crisis. Commonly there are marked morning remissions in the temperature. There is the same altered respiration-pulse ratio and more pronounced dyspnea. Cyanosis is more common and in infants may be accentuated by atelectasis. The digestive organs are more apt to be disturbed. On examining the chest we find in addition to the râles of bronchitis some patches, usually toward the bases, of very fine moist râles which have usually a high pitched ringing sound, due to small areas of consolidation. Only when these areas are of considerable size do we get the ordinary signs of consolidation. The signs are present to some extent in both lungs as a rule. Leukocytosis occurs as in lobar pneumonia. In the secondary cases the onset is not so striking. This form may be due to the pneumococcus alone, but is generally due to a mixed infection. The temperature rises and respiration and pulse become more rapid and changed in ratio. Examination reveals the characteristic fine moist râles and perhaps signs of consolidation. If the primary disease is accompanied by a rash it usually becomes less marked when pneumonia develops. In cases of extreme debility and malnutrition bronchopneumonia may occur with very few symptoms or physical signs. The chief things we have to differentiate bronchopneumonia from are pulmonary tuberculosis and acute general miliary tuberculosis. This we may do by the history, examination of the sputum, and by tuberculin vacci-

nation. In acute general miliary tuberculosis there is apt to be a continuous high temperature and a rather marked tendency to cyanosis.

Treatment of Lobar Pneumonia.—Since in any given case we cannot at the start be sure of smooth sailing we should in every instance put the patient in the best possible condition to make a good fight if called upon. To accomplish this we should first and most important give the child the benefit of the cold-air treatment as advocated by Northrup. I believe a fair test of this method in severe cases of pneumonia will convince unbiased observers of its efficacy. Take, for example, an infant who is not standing the disease well; his pulse, respiration and temperature are high; he is restless, sleeps little and takes very little food. Now put this patient in a clean sunny room of a temperature between 50 and 60 and in twenty-four hours you will see that he breathes less often, his pulse and temperature are lower, he is much quieter, and he takes more food. In short, there is a marked general improvement and it is not only temporary. It is my belief that the disease runs a shorter course but obviously that would be very difficult to prove. There is one important point in the technic of this method and that is keeping the patient warm without overburdening him with clothing.

There should be a thick mattress and blankets underneath the child; he should wear a cap, have hot-water bottles at his feet, and then only enough covering to keep him comfortable. In practice one has to guard against too many blankets which result in keeping the patient constantly bathed in perspiration. Particularly to be avoided is the wrapping of a heavy blanket snugly about the infant with consequent added difficulty in breathing. The physician should give explicit instructions to the nurse and see to it that she obeys them.

The next matter of importance is the child's feeding. The food must be suited to the patient's present digestive capacity. It is much better to begin with too weak than too strong food. Whole milk should not be given. Half-strength milk will do for some cases. Many require much weaker food. Food that is ingested but not digested cannot fail to do harm. Milk diluted with cereal water, beef-juice and broths are the best foods. I have found panopeptone of service where very little food could be taken. Abdominal distention from fermenting food is sometimes a very troublesome complication.

In the beginning calomel should be given and followed by

castor oil if child is not vomiting. The bowels should be well moved every day by enemas or laxatives. Stimulants in many cases are not needed at all, but if the circulation begins to fail they should be used freely. The danger of heart failure at time of crisis is much less than in adults. Expectorants should not be given at all. Opium or other sedatives are rarely called for except in the cerebral cases.

Fever should be reduced only if it is disturbing the patient. With the cold-air method many cases require no treatment directed to the fever. To reduce the temperature we may sponge with alcohol and water at a temperature of 80° F. or apply cold compresses to the chest, wetting them every hour with water at 80° F. Irrigation of the colon at a temperature of 85° F. is an easy and effective measure. Cold baths are too apt to cause depression. A daily tepid bath (90° to 95° F.) should be given, as it helps keep the skin active and is usually soothing. No mention has been made of serum and vaccine treatments as their status is still uncertain.

If otitis media occurs the ear-drum should at once be punctured. Empyema requires resection of enough of one rib to give free drainage for three or four weeks.

Treatment of Bronchopneumonia.—As this is a much more serious disease than lobar pneumonia careful treatment is of greater importance. More than any one thing the cold-air treatment will help the infant's respiratory nervous and digestive systems. It slows respiration and tends to prevent atelectasis; it quiets the nervous system; it stimulates the appetite and increases the digestive strength. As the infant's power of digestion is its main source of strength nothing should be done that could impair it. The food must be carefully regulated. A common mistake is giving food too often, too strong, or in too large quantity. The patient who does not digest his food has a poor chance of recovery.

In the beginning calomel should be given and followed by castor oil if child will take it without a struggle. The oil is very efficient in cleaning out undigested food and the mucus which the child swallows. In the early stages vigorous counter-irritation by mustard is of distinct service. Stomach disturbing stimulants and expectorants are contraindicated.

Stimulants will probably be needed but should only be given when positively indicated. The writer relies almost entirely on whiskey, strychnine and strophanthus. A single large dose

of atropine is said to be good when the tubes are filling with mucus. Eserine sulphate will often relieve tympanitis but it cannot overcome the effects of persistent bad feeding nor that paresis of the intestinal walls that appears a short time before death.

To relieve a threatening cyanosis the writer has used with great satisfaction a mustard bath at a temperature of 110° F. The bath should last but three to five minutes. It is usually followed by a drop in the temperature of the infant. If fever is causing disturbance it should be relieved as in lobar pneumonia. Finally, and of some importance, if the child is sick enough to lie quietly in one position, we should never forget to instruct the nurse to change the position every couple of hours and occasionally lay the child across her lap face downward.

In the nature of things no plan of treatment can save every case, but if we give the child the best that medical science affords we can at least feel that we are doing our full duty.

111 MONTAGUE STREET.

INFLUENZAS OF CHILDHOOD.¹

BY

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(With charts.)

THE term influenza is used in two different senses. The old clinical meaning of influenza was, of course, a general catarrhal cold. After Pfeiffer had discovered the influenza bacillus, which is apparently the etiological factor in so-called grippe, we began to discover that the organism was not only the cause of influenza in the clinical sense, but that it was also responsible for infections in almost every tissue of the body. This led to the use of the term influenza in a much wider sense, and we now speak of influenza of the respiratory passages, influenza meningitis, influenza nephritis, etc., covering almost every organ. In this country the influenza bacillus is generally recognized as the only cause of grippe, although it is usually associated with other organisms. Its most frequent associates are the pyogenic cocci, the pneumococcus, the micrococcus catarrhalis, and sometimes the bacillus pyocyaneus. In Europe, however, two other organisms are spoken of in the literature as being the cause of epidemic colds, the micrococcus catarrh-

¹ Read before the Williamsburg Medical Society, October 10, 1910.

alis and the bacillus segmentosis or bacillus septus of Cautley. The latter organism is almost unknown in the literature of this country. In England, however, it is frequently spoken of and recognized as a pathogenic organism. In the *Journal of the American Medical Association* for September, Walter, of Chicago, speaks of the Cautley bacillus as being frequently present in the cases investigated by him.

TYPES OF INFLUENZA.

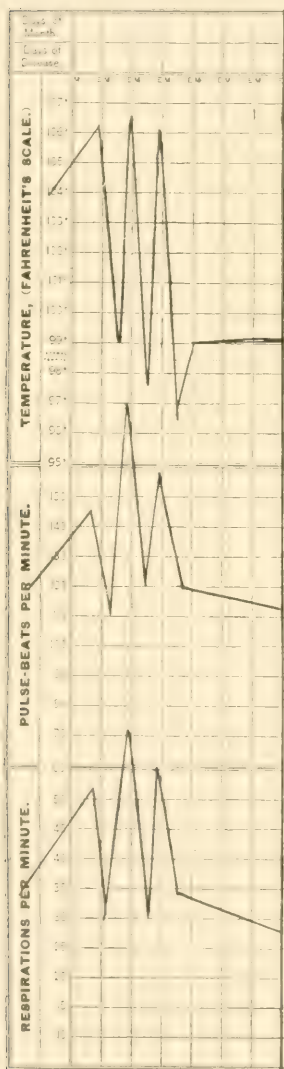
Using the term influenza in the larger sense mentioned above, we get in children many types of influenza infection. The most frequent, of course, is the infection of the upper air passages followed in many instances by pneumonia of a very fleeting type or, on the other hand, a pneumonia of very prolonged duration.

In all protracted pneumonias in children an influenza infection should be suspected and the organism will usually be found associated with the pneumococcus in the sputum. In some cases of a mild infection in the upper air passages in children we are suddenly met with an acute collapse with all symptoms of kidney failure. The postmortem examination of fatal cases of this type has shown that we are dealing with an acute glomerular nephritis. The urine in such instances may be bloody and shows a considerable amount of albumen and casts. The prognosis is entirely uncertain as some of the apparently most severe attacks clear up very promptly in less than a week, showing no after-effects whatever, while other cases which are apparently not so severe may go on to a chronic nephritis.

The infection of the meninges with the influenza bacillus is, I believe, of more frequent occurrence than is generally supposed. Only about thirty-five authentic cases have thus far been reported in the literature, a large majority of them in very young infants. Clinically this type of meningitis is very acute and greatly resembles meningococcus meningitis. The temperature may run very high and symptoms of cerebral irritation are pronounced. As many of these cases occur under a year, and as in children of that age the cerebrospinal fluid is only occasionally examined, it is quite possible that many cases of infection of the meninges with Pfeiffer bacillus are classified as cerebrospinal meningitis. It is also possible that at least some of the cases of meningitis in which there is a report of a

"dry tap" are caused by this organism, for the reason that the cerebrospinal fluid in the last stages becomes so thick that it fails to pass through the ordinary needle.

Aside from the local infection the general toxemia varies



to a marked degree. It is probable that the toxin expends itself in some cases on the general nervous system and in a local way on the thermic centers in those peculiar cases of extremely high temperature which will be mentioned later. The possibility of a dangerous degree of toxemia both in childhood and in adult life, is well recognized and all physicians warn their patients against the depressing effect of grippe. This toxemia in some instances expends itself on the heart muscle without giving any general manifestations of the clinical type of influenza. I have seen several instances in which the myocardial degeneration occurred after a mild febrile attack with only a slight reddening of the fauces. In one instance there was an acute dilatation of the heart in a boy whose heart sounds were in every way normal one week before the attack when I had examined him in my office. This boy was completely prostrated for about ten days after which he made an uneventful recovery with no residuary lesion. Although no paralysis develops, these cases suggest diphtheritic myocarditis.

Pus formation, in the joints particularly, may occur as a result of influenza infections. These cases are, however, even rarer than the others mentioned and occur only in children of low powers of resistance.

This covers in a very brief way the various types of infection with the Pfeiffer bacillus. In any and all of these various local infections we are apt to meet with the typical influenza tempera-

ture which has been noted by many observers. As a number of these charts have just been published by Dr. Holt in the *Jour. Amer. Med. Assn.*, October 8, it is unnecessary for me to present many of them; I have, however, one which I present on account of the very unusual type of the disease. This was a female infant of twenty-one months, normal in every particular. I first saw the child late in the afternoon, on account of high fever and stupor. She had been perfectly well in the morning but toward noon began to appear unwell, and at the time that I saw her she was extremely drowsy; her pulse and respiration at first suggested pneumonia and on taking her temperature I found it to be over 106° . Careful examination revealed nothing abnormal in any part of the body except a slight redness of the tonsils and fauces. No positive diagnosis could be made but the conditions suggested a severe infection of some kind, possibly in some part of the brain or meninges. Hydrotherapy had no effect whatever on the temperature, but at midnight there was a slight sweating and the temperature evidently dropped rapidly. The next morning it was slightly subnormal and the child was apparently well and ready to eat its normal meals. In the afternoon the temperature went up in exactly the same way with similar symptoms. This occurred for three successive days and then stopped and the child was entirely well from that time on. After the second rise in temperature and drop I was inclined to believe that I was dealing with a severe malarial infection, although the blood examination had been negative. If quinine had been given in this case and the temperature had failed to rise, the inference would of course have been drawn that this was an acute malarial infection. A smear from the throat, however, showed a Gram-negative bacillus which was in all probability the bacillus of Pfeiffer, and about five days later nearly every other member of the family developed a typical influenza cold.

RELATION OF INFLUENZA TO TUBERCULOSIS.

From current literature we have been led to believe that influenza infection in the presence of pulmonary tuberculosis is a serious affair. This, however, has not been my experience. In March last a child with a slight pulmonary lesion was taken into the children's wards of the Brooklyn Home for Consumptives, and three days afterward developed a typical influenza temperature very similar to the chart already mentioned. This

acute infection lasted for about six days and then disappeared without any bad effects whatever, and the child went on to the rapid improvement which we usually see in such cases under proper conditions. One week later two other children in the ward, a brother, and sister developed a similar attack of high temperature and prostration. Both of these children were in the second stage of pulmonary tuberculosis, although they had been improving wonderfully under the hygienic conditions of the Home. There was slight recrudescence of their pulmonary signs during the high fever but aside from that the boy showed no bad effects from the infection. The girl who in addition to her pulmonary lesion had an old cervical adenitis which had been operated about one year previously developed in addition to her bronchial irritation a very severe erythema, radiating from the old scar in her neck and covering the greater part of one side of her face and scalp and over her shoulder blade. This erythema closely resembled a typical streptococcus erysipelas, but it cleared up very rapidly and there was no indication at any time of any actual pus formation. This patient also went on to uninterrupted improvement as soon as the acute attack had passed.

During the month there were three other similar infections among the children of the Home and in no instance was there a serious effect noted. These attacks would seem to indicate that an acute influenza infection does not call for a grave prognosis in tubercular patients.

137 CLINTON STREET.

IS SCARLET FEVER A LOCAL DISEASE?*

BY

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To the subject I have chosen I have given considerable thought, and though my theories may be wrong, they may awaken new ideas and ultimately lead to a clearer and better knowledge of this disease.

Scarlet fever, I believe, is a local disease of the naso-pharynx, involving the tonsils and adenoids and extending into the adjacent tissues. The constitutional symptoms are caused by a

*Read before the Medical Society of the Borough of the Bronx, October 12, 1910.

toxemia produced chiefly by the streptococcic infection plus the scarlet-fever infection, these being localized in the naso-pharynx.

The cause of scarlet fever is no doubt a specific germ which in all probability will be found in the exudative membrane covering the tonsils and adenoids, also in the tissues of these bodies, as well as in the discharges from the naso-pharynx, ears, and glands of the neck, also in ulcers around the nose and mouth.

The fatty changes in the muscles, especially those of the heart, and the cloudy swelling of the kidney and of the liver are, in my opinion, due to the toxemia.

The scarlet-fever throat, pure infection, is red without an exudative membrane and in these cases we have very slight constitutional symptoms.

The exudative membrane which is found on the tonsils and adjacent tissues is not diphtheritic in a vast number of cases, but is a streptococcic condition. I am convinced that the more membrane there is in the naso-pharynx the more severe are the constitutional symptoms, as the toxemia is thereby increased, and it should therefore be our aim to lessen the growth of this exudative membrane, thereby lessening the amount of toxemia. I am further convinced that the chemical reaction of the secretions of the naso-pharynx plays an important rôle in stimulating the growth of this streptococcic membrane; which reaction, acid or alkaline, is the more potent I am at present unable to state, but I believe this point is one of great importance, as it may aid us in the local treatment of this disease.

According to the authorities the period of incubation varies from twenty-four hours to twelve days; usually two to four days. It is also stated that the chief source of contagion is the desquamated skin and that desquamation begins about the tenth day; it is my contention that desquamation is not directly a source of contagion and that the chief source of contagion is the discharge from the naso-pharynx; especially in the early stages of the disease, before the tenth day, and also the discharges from ulcers around the nose and mouth, and from suppurating glands and ears.

To prove this statement of contagion, I have here a report of 344 secondary cases (by these secondary cases I mean cases occurring subsequently to the primary case in the same family) and out of this number, 242 cases appeared before twelve days from the onset of the first or primary case. Now, allowing only three days as an incubative period for all of these

cases, it would bring the onset of these secondary cases prior to the time of desquamation of the primary case.

The eruption or rash, which appears within twenty-four hours of the onset and is seen first on the neck, spreading rapidly over the entire surface of the body in a systematic order, requiring three days to complete its progress and fading in the same order, is, in my opinion, an inflammatory condition affecting the superficial lymphatic system found immediately beneath the skin, and is due to the toxemia caused by the streptococcic infection, this toxemia entering the system chiefly by way of the tonsils and adenoids, and is conveyed to and over the entire surface of the body by the lymphatic system and *not* the blood current.

My reasons for believing the toxemia is conveyed to the surface of the body and over the surface of the same by the lymphatic system and not the blood current are as follows:

First, that the rash begins at one area and, spreading similarly to erysipelas, follows the course of the superficial lymphatics.

Second, that were the toxemia conveyed to and over the surface of the body by the blood current, why should the invasion and course of the eruption be so systematic, beginning at one point (the neck) and ending at the tips of the fingers and toes, taking a period of about three days to complete its progress? I am sure the blood current, which takes about forty-five seconds to complete the circuit of the body, would produce the rash over the entire surface at about the same time.

Fever, rapid pulse, rapid respiration, loss of appetite, constipation, and urinary disorders are all due to the toxemia.

The high temperature may be explained as follows: Owing to the toxic poisoning of the system and the inflammatory eruption covering the entire body, the system of heat production and heat elimination is disturbed, the toxemia causing an increased heat production, and this heat is stored up in the body because the heat-eliminating channel (the skin) is affected due to the rash occluding the pores. My reasons for this assertion are as follows:

1. The toxemia having been counteracted by the leucomains of the system, the heat production is lessened and the febrile symptoms abate.

2. After the eruption has run its course and is disappearing and the heat-eliminating channel (the skin) is slowly restored, the fever falls by lysis.

Restlessness, headache, insomnia, delirium, convulsions are

caused as follows: 1. By local conditions in the naso-pharynx causing pain and discomfort. 2. By the eruption or rash causing a burning and itching sensation. 3. The toxemia.

The most important complication, nephritis, is chiefly caused by the toxemia and the eruption. The eruption involving the entire body surface, thus interfering with the eliminating properties of the skin, the kidneys are called upon to perform more work; this in connection with the toxemia causes an inflammation of the kidneys. In confirmation of this statement allow me to say that we know from experience that nephritis is caused in a like manner by a burn of the first degree involving a large area of the skin's surface.

The more common chest complications are endocarditis, pericarditis, and catarrhal pneumonia. The pericarditis and endocarditis are due to the toxemia and streptococcus infection. The catarrhal pneumonia is due to direct infection by inhalation from the naso-pharynx.

3. Suppurating lymph glands of the neck and inflammatory and suppurating conditions of the middle ear are caused by direct infection of the streptococcus germ plus the scarlet-fever cause.

4. Inflammatory condition of the joints resembling rheumatism are caused by the toxemia. Meningitis is caused by direct infection due to extension from the naso-pharynx.

The *treatment* of scarlet fever can be summed up in a few words as follows:

1. Local treatment:

a. Naso-pharyngeal Irritation.—This disease being a local one, involving the naso-pharynx chiefly, any antiseptic solution (bichlorid of mercury 1 to 10,000, boric acid 1 per cent., benzoic acid 1 to 10,000 solution) might be used as a naso-pharyngeal irrigation. Using a soft-rubber catheter attached to the tube of a two quart fountain syringe and thoroughly irrigating the naso-pharynx with two quarts of any antiseptic solution three or four times daily, especially during the beginning of the disease, is the best method of procedure. This irrigation is best accomplished by laying the patient on the stomach with the chin resting upon the back-rest of the bed-pan, then introduce the soft-rubber catheter into one nasal aperture, pass it posteriorly and thoroughly irrigate the naso-pharynx; remove the catheter and proceed in like manner with the other nasal aperture. I am indebted to Dr. T. Jos. Dunn for this most valuable method of treatment.

b. Sprays, gargles, swabs and mixtures of an antiseptic nature are also to be used.

2. Constitutional Treatment.

a. Diet.—This should be liquid during the febrile stage, or as long after as conditions may demand.

b. Medication.—This is best carried out by watching the symptoms as they arise and treating them when necessary with the proper therapeutic measures.

The following conclusions may be deduced:

1. That scarlet fever is a local disease involving the nasopharynx.

2. That all the constitutional symptoms are due to the toxemia produced by the streptococcic infection of the throat and nose which is a complication of the pure scarlet-fever infection.

3. That the more severe the local conditions of the nasopharynx the more severe the constitutional symptoms.

4. That the germ causing scarlet fever is no doubt to be found in the exudative membrane covering the tonsils and adenoids and also in the lymph channels, discharges from the nasopharynx and ulcers about the mouth and nose.

5. That the rash which is caused by the toxemia travels to and over the surface of the body by way of the superficial lymphatic system and not by the blood current.

6. That the contagion of the disease is not found in the desquamated skin (directly), but is found in the discharges from the nasopharynx, ulcers, suppurating glands, and ears of persons suffering with the disease.

7. That the contagion of the disease ends with the cessation of these discharges.

8. That desquamation is not a positive sign of recent scarlet fever, as scarlet fever can exist without any subsequent desquamation; and that desquamation may be the result of a number of constitutional diseases of long duration, as pneumonia and tuberculosis; or some local inflammatory condition of lengthy duration as sunburn or poison-ivy poisoning; or the internal ingestion of some drugs, as arsenic; or the external application of strong antiseptics, as carbolic acid or formaldehyd gas.

9. That the complications of this disease are due to the toxemia or to direct infection of the streptococcic germ with the accompanying scarlet-fever cause.

SEVEN INTERESTING RECTAL PEDIATRIC CASES.

BY

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IN most works on diseases of children very little is said about anal and rectal lesions. I presume there are hundreds of cases where such lesions are present seen at the dispensaries of the different hospitals, but I doubt if in many of the institutions a careful examination of the anus and rectum is ever made. These cases are generally treated by internal medication and the child continues to suffer; especially is this true in cases of persistent diarrhea and constipation. I am sure that if children suffering from long continued diarrhea or constipation were subjected to a proctoscopic and sigmoidoscopic examination that the causes of the diarrhea and constipation would often be found in some local lesion, perhaps some angulation, or the dilated sigmoid which is known as megalo-colon. I give below a few histories of cases to illustrate the necessity for looking more thoroughly into this region of the anatomy.

CASE I.—*Ischiorectal Abscess in a Child Three Weeks Old.*

H. M. No. 26783, a male child weighing nine pounds, delivered with forceps. About one week after birth mother received a very severe shock as one of her children was badly burned. After this she noticed that the baby cried incessantly and appeared to be very restless and to lose weight. At the end of a week she discovered that she had practically no milk and surmised that this had occurred as a result of the shock she received. She felt that it was probable that the child had practically no nourishment during this period. Subsequently, while washing him she noticed a swelling in the buttock which was red and tense. She applied poultices and the swelling broke, discharging pus. She then brought the child to St. Bartholomew's Clinic where he was examined by the medical staff and referred to our clinic for treatment. The diagnosis of the medical clinic was marasmus. The child then weighed six and a half pounds. The navel stump was not healed. There was bronchial breathing, râles over both sides. Mother said its bowels had not moved for two weeks.

On examining the child I found a brawny swelling on the right side with fairly large opening into the ischiorectal fascia. As the child was in such poor condition and as the abscess seemed

to be draining fairly well, we did not deem it necessary to do anything further at that time. Advised the mother to keep the abscess washed out with warm salt water and to bring the child back to the clinic in a couple of days. As the child did not return we made inquiries and found that it died two or three days subsequently.

This case presented several interesting points.

A child fifteen days old with a large ischiorectal abscess. The child was perfectly healthy when delivered. What was the origin of the abscess? Was the abscess the cause of the child's death? We are inclined to think that it certainly contributed to it. We thought it might possibly have been a breech presentation and during delivery received some traumatism which subsequently resulted in an abscess, but the nurse who looked after the family said that the child was a normal vertex presentation, so that eliminated the possibility of injury during delivery. It might possibly be that owing to the constipated condition of the child a lot of feces accumulated in the bowel, and in trying to remove them the rectum was traumatized in some way.

CASE II.—*Pruritus Ani*.

M. L. B., female child, seven and a half years old (31297). This child was brought to St. Bartholomew's Clinic by her mother, who stated that she was suffering from itching around the anus which was worse at night and was only relieved when she had given her an injection of water. She slept indifferently and had very poor appetite.

Examination.—Poorly nourished female child, pale and anemic. Sphincter spasmodically contracted, anus congested, skin dry and cracked and thrown into folds. Between the folds there were little pieces of fecal matter and mucus and two pin worms just at the edge of the anus.

Proctoscopic examination revealed a hypertrophic catarrh with a good deal of mucus and a little pus mixed with fecal matter; some few ulcerations in the rectum.

Diagnosis.—*Pruritus ani* due to pin worms.

This child suffered from this condition for three years and had been given medicine internally, when a proctoscopic examination or even an inspection of the anus would have revealed the cause of the trouble.

The mother was instructed to give the child a cathartic, to put her in the exaggerated knee-chest posture and wash her out with a pint or two of lime-water once a day. We saw the child three or four days after this treatment had been instituted and she was very much improved, had been sleeping fairly well, and we hope by continuing this treatment to cure the *pruritus*. Of course the skin locally had to be treated, otherwise, notwithstanding the fact that the cause was removed the *pruritus* would continue, because the skin was infected. We find the best treatment in these cases is to paint the skin with a 5 per cent. solution of nitrate of silver.

CASE III.—*Rectal polyyps.*

J. A., a male child four and one-half years old, was referred to me by Dr. Kilmer. For two years the bowels had been moving four or five times daily. About one year ago the mother noticed blood on his clothes. She examined the stools and found them streaked with blood. The child had been losing flesh and strength for some time and his appetite was very poor. Had been treated for a year by his family physician, but no examination of the stools was made. Child was thin, pale, emaciated, thin red lips, very white face.

Proctoscopic Examination.—Mucous membrane covered with pus mixed with blood and mucus. In the sigmoid five polypoid tumors could be made out, one exceedingly large. The patient was placed in the Polyclinic Hospital and the polyyps removed at four sittings by means of a wire snare. The first tumor was so large that we were afraid to entirely remove it, so the wire was twisted around the base of the tumor and allowed to remain *in situ* until it came away of its own accord, which it did in about forty-eight hours. The other tumors were removed without any difficulty and the child left the hospital three weeks afterward, having gained six pounds.

This case illustrates the necessity for a careful examination of the rectum of children giving a history of diarrhea with blood in the stools.

CASE IV.—*Rectal polyyps.*

Male child five years old, brought to St. Bartholomew's Clinic by its father. The father stated that the boy's mother had died three years before and as he had to work out himself the boy had very little care except what the neighbors did for him. He noticed that the child for some time past had been losing flesh and his attention was drawn to the rectal condition by the fact that the boy's underclothes were stained with blood. He watched the boy for a few days and found that when his bowels moved he would lose a good deal of blood. He had a constant desire to move the bowels and would spend a lot of time sitting in the toilet. He would also pass clotted blood in between times, and sometimes bright red blood would ooze through the anus.

Examination.—A thin, underfed boy, looked tired and indifferent. Examination with the short proctoscope revealed a half-dozen polypi with long stems, varying in size from a cherry to a bean. These were all removed at one sitting by means of the snare. The boy returned to the clinic three or four times afterward, and when discharged as cured was in very much better health.

CASE V.—*Prolapse of rectum.*

Female child two and one-half years old, brought to the Polyclinic for rectal condition. The mother stated that every time the child's bowels moved something would come down and she could replace it when the child would feel fairly comfortable until the next movement.

Examination revealed a complete prolapse of about 2 inches of the rectum. Mother was advised to place the child in the hospital for treatment, but she refused at the time and we lost sight of the case.

CASE VI.—*Fistula in ano.*

Boy four years old referred to my clinic at St. Bartholomew's Hospital. Mother stated that the boy was constipated and when she gave him cathartics he would suffer intense pain when the bowels moved. She noticed some blood on the child's clothes.

Examination revealed a submucous fistula in the anterior commissure with some lacerations between the two sphincters at the internal opening of the posterior anus.

The child was given gas, after it had been properly prepared, and the fistula laid open and afterward treated until it had thoroughly healed.

CASE VII.—*Gonorrheal infection of the anus.*

A boy of ten years was brought to my clinic by his father for warty growths around the rectum. The boy had been suffering for some time but did not say anything to the family about it. He was strong, healthy, and exceedingly well nourished. The father was suspicious that the boy had been criminally assaulted. The anus and skin for about 1 inch around the circumference of the anus was covered with warty growths. There was a discharge of mucus and pus from the anus.

Examination with the proctoscope revealed a dull red congestion of the lower 2 inches of the rectum which was covered with mucus and pus with some superficial ulcerations.

The boy was put under an anesthetic and all the growths removed with the actual cautery. He was treated locally by washing out the anus with warm alkaline solutions and sterile water twice daily, and then painting with argyrol. At the end of a month he was discharged cured.

58 W. FIFTY-EIGHTH STREET.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Meeting of October 3, 1910.

ELI LONG, M. D., *in the Chair.*

REPORT ON THE USE OF EHRlich-HATA FOR THE CURE OF SYPHILIS.

DR. HERBERT BUDDINGTON WILCOX presented a girl of twelve years who was first seen at the Bellevue Clinic in November, 1909, suffering from the periostitis and muscle pains of syphilis.

After some weeks of treatment in the childrens' ward she returned to the clinic and was under observation until August,

when she developed a keratitis with severe inflammation of the entire eye, considerable hemorrhage, and marked photophobia. Under the usual treatment there was no improvement at the end of two weeks and Dr. M. S. Kakels then injected three decigrams of Ehrlich's 606. In twenty-four hours the evidences of acute inflammation had almost subsided. The photophobia was correspondingly diminished. In the six days following the exudate and hemorrhage rapidly absorbed, the cornea being to-day nearly clear.

There was considerable pain and edema at the site of the injection for forty-eight hours. The temperature rose to 101° on the second day and was normal on the fourth day. The urine was examined daily and was negative.

There was a leukocytosis of 20,000 on the second day, dropping to 12,000 on the fourth day. The Wasserman reaction showed gradual reduction in intensity, being very weak at present.

This patient illustrates the remarkable effect of Ehrlich's on an acute inflammation due to syphilitic poison.

As illustrative of the action of the drug in clearing up the products of inflammation, Dr. Wilcox reported the case of a boy nine years of age whom he had expected to present. This child had a double keratitis leaving him with barely light perception.

He was a patient of Dr. Denig and was sent to Bellevue for treatment. He was given the same dose as the former patient and had no local reaction. The urine remained normal. The temperature rose to 101° F. on the second day. There was a leukocytosis of 15,000 for two days. On each of the six days following the injection there was noticeable lessening of the opacity of both eyes and at the end of ten days he was able to distinguish objects at a distance of 5 feet.

The first patient gained eight pounds in two weeks following the injection. No record was kept of the weight of the boy.

DR. CHARLES HERMAN reported a case of hereditary syphilis in his service at the Lebanon Hospital in which the mother had been injected by Dr. Kakels with Ehrlich's 606. The baby was at the breast and received the supposedly curative substances with the mother's milk. Several cases had been successfully treated in this way by German physicians. Thus far, that is six days after the injection, the patient had not shown distinct signs of improvement. It is extremely important that cases of hereditary syphilis should have breast milk and it has been suggested that in cases in which the mother is unable to give the breast, a syphilitic wet nurse should be injected with 606, and the baby nursed at her breast.

DR. ALFRED F. HESS said that last summer he saw three cases of hereditary syphilis treated with Ehrlich's preparation and in all disagreeable local symptoms developed after the injection into the buttocks. In one case, a miserable, marantic child, six weeks after the injection necrosis developed. The children

ran temperatures. The syphilitic symptoms disappeared. The local symptoms were quite severe. The injections were made by an experienced man and the solutions were neutralized.

CONGENITAL CARDIAC DISEASE WITHOUT CYANOSIS.

DR. F. L. WACHENHEIM presented a child six years old. When examined six months ago there were positive signs of an open intraventricular septum and also stenosis of the pulmonary conus. There was a loud murmur below the pulmonary site. In spite of the cardiac lesions there was no cyanosis.

DR. WILLIAM P. NORTHRUP said that the question of the noise must depend upon the relation of the pressure on the two sides and the size of the openings. He made a diagnosis of congenital pulmonary lesion. He had made a number of autopsies on these cases and he had verified about eight of them.

DR. L. E. LAFETRA said that at the Vanderbilt Clinic he probably saw one instance every month of these congenital cardiac cases without cyanosis. It should be kept in mind, on the one hand, that marked congenital murmurs with no cyanosis are not at all uncommon; and on the other hand, that there may be extreme cyanosis and clubbing of the fingers with absolutely no murmur to indicate the heart deformity. In all doubtful cases, examinations of the blood may be of value since high hemoglobin and a red-cell count of over 5,000,000 would indicate congenital heart disease.

HYSTERICAL SINGULTUS.

DR. SARA WELT-KAKELS presented a girl, twelve and a half years old, who had this condition which had lasted four and a half weeks. Her parents were Russian Jews, both healthy. The mother was rather nervous. Six brothers and sisters died in early childhood; there were two abortions and three brothers and four sisters were living, all healthy except one, who was an inmate in a home at Randall's Island for the past fourteen years; she is said to be blind and crippled. This child was born at full term with a normal delivery and not asphyxiated at birth, and had been always well except for an attack of measles when three years of age and an attack of diphtheria three years later. One year ago she had her tonsils and adenoids removed; otherwise she had been perfectly well. At school she was a good pupil and she had a good disposition. During the past six months she had hiccough occasionally, lasting for a few minutes at a time. Six weeks ago she received a sudden fright and two weeks later, about four and a half weeks ago, her present condition showed itself, and had kept up constantly. She was shown before the Society of German Physicians during the last day of September. There the child was kept in a room by herself for some time, but the hiccough still persisted. She was examined by several physicians. On her way home the hic-

cough ceased and remained away for six days when it started again and had kept up constantly since; it stops during the night but starts immediately upon waking. The child had lost her appetite and complained of pain in the epigastrium. She slept well. The child had come under Dr. Kakel's care on September 28 and the examination showed a well developed child weighing eighty-six pounds. The temperature and pulse were normal; the latter was sometimes accelerated. The deep reflexes were increased. There was anesthesia of both conjunctivæ. The sense of taste and smell was normal. There was no disturbance of sight or hearing. The singultus occurred about twenty-four times to the minute and seemed to be worse while the child was being examined. For differential diagnosis it is important to remember that persistent singultus occurs in diseases of the gastrointestinal tract and the peritoneum; it also may be dependent upon direct lesions of the phrenic nerve. It also occurs in myelitis (cervical portion). The treatment consisted in rhythmic traction of the tongue, compression of the lower half of the thorax, and insertion of the esophageal tube. In an epidemic of singultus which attacked ten school girls reported by Abeles six were cured at the first examination. Electricity, hydrotherapy, opium and chloroform all produced good results. Hysteria was formerly believed to be dependent upon diseases of the female generative tract. It was thought impossible that girls under the age of puberty should suffer from it and for the same reason the male sex was thought to be exempt from it. But hysteria is found in children among boys more frequently than at a later period of life. Bruns found in his cases that hysteria was most frequent between the seventh and fourteenth years; up to the ninth year cases were equally frequent among girls and boys; after that girls showed a greater predisposition; his youngest patient was a boy in his third year. The hysteria in children was characterized by mono-symptomatic character as well as by the absence of stigmata. This was explained by the greater simplicity of the psychic life of the child. The prognosis was better since it was easier to influence the child's mind, and the children were used to obedience. The treatment was solely psychic.

DR. WILLIAM P. NORTHRUP said he was struck by the suggestion of placing the child in a hospital. He recalled the case of a girl living in New Jersey who was said to have epilepsy. When she came to the hospital she had twenty-seven epileptiform convulsions on the first day; the second day she had twenty-seven fits. She was placed in the ward and her convulsions dropped shortly to twelve a day. After three weeks the number of fits was reduced to six a day, and soon ceased. This child remained in hospital for three months and the fits did not return. She returned to her home and again the epileptiform convulsions appeared. Here entered the question of the home life. The parents talked about fits before the child. The

people smoked and pow-wow'd up to midnight when the child was present. At home the fits kept up. She was again returned to the hospital and placed on ward diet and in ward regulations and with the same effect as before; the epileptiform convulsions ceased. The latest report is that the child has not had an epileptiform convulsion in more than three years. The original diagnosis was epilepsy, and this was confirmed by an expert neurologist. Her seeming entire recovery is the only reason for thinking it may have been hysterical and not true epilepsy.

PURPURA HEMORRHAGICA IN A BOY FIVE YEARS OF AGE SUCCESSFULLY TREATED WITH HUMAN BLOOD SERUM.

DR. CHARLES GILMORE KERLEY saw this boy in consultation with Dr. Carwin of Rye, N. Y. The family history was negative. His tonsils and adenoids were removed six months before his present illness with no more than usual bleeding. On June 15, the boy was taken ill and ran a temperature which ranged from 100 to 102°; this continued for one week. During this period there occurred numerous subcutaneous hemorrhages at various sites over the body and particularly on the legs. A large hematoma developed in the abdominal wall. There was some bleeding from the gums and the subcutaneous hemorrhages continued to appear on the chest, abdomen, and legs. There was a moderate bleeding from a bicuspid tooth. The child was given calcium lactate in small doses, 3 grains every three hours. The hemorrhage from the gums stopped and the subcutaneous hemorrhages began to show signs of absorption. On July 7, a little over two weeks after the first sign of the purpura, there was a hemorrhage from the nose which lasted one hour. On the day following there was another hemorrhage from the nose which lasted five hours, and which resisted all the ordinary efforts at control. The patient was then seen by Dr. Kerley. He evidently had suffered much from the bleeding. The skin was pale and sallow, and showed in many areas the evidences of the previous subcutaneous hemorrhages. The calcium lactate was resumed in 10 grain doses every two hours. Because of the greatly reduced condition of the patient, normal salt solution was given through a tube introduced into the colon by the drop method. The stools at this time consisted largely of coagulated blood. By July 9, the hemorrhage appeared to be under control. Twenty grains of calcium lactate were given every two hours. On July 10, a nasal hemorrhage began at 5 A. M. and continued for five hours. The saline irrigation that was given returned blood stained. The child was now in an extreme condition and 30 c.c. of human blood serum were injected hypodermically by Dr. Welsh. During the remainder of the day from 45 to 60 c.c. of the human blood serum were injected at two-hour intervals until midnight. The amount injected in twelve hours was 290 c.c. In the evening there was an evacuation of the

bowels which was composed entirely of coagulated blood. On July 11, the stools contained blood and the expectoration contained some bright red blood. There was a moderate nasal hemorrhage. One hundred and sixty-seven c.c. of human blood serum were given in three doses, at 8 A. M., 3 P. M., and 9 P. M. On July 12, there was no visible hemorrhage from any portion of the body. Four hypodermics of blood serum were administered, the total amount being 191 c.c. During the following three days, three injections of the serum were given in quantities ranging from 20 to 30 c.c. On July 16, two injections were given of the serum at twelve-hour intervals, 44 c.c. in all, and on July 17, one injection of 35 c.c. was given. The total amount of serum given during the one week of treatment amounted to 1,034 c.c.

From this time the child made a slow but steady improvement and eventually made a perfect recovery. It was of interest to note that the hemorrhage which had continued intermittently for nearly three weeks ceased within fifteen hours after the first injection of the human serum. It would seem that here was a case where, beyond possibilities of doubt, the use of the human blood serum saved the life of the child.

MECHANICAL INJURIES (BLOWS AND FALLS) OF THE HEAD IN
INFANTS AND CHILDREN. THE NECESSITY FOR IMMEDIATE
TREATMENT. WHAT SHOULD THIS BE?

DR. H. ILLOWAY read this paper. When children fell against obstacles, or were struck upon the head in the course of play, they cried for a time, were often soothed to quietness, and soon all was forgotten, until sooner or later some one or the other of the symptoms of cerebral concussion manifested themselves. Although it was true that in a great number of these instances the traumatism had been apparently of a trivial character, so slight that the brain was not at all affected thereby, it was equally true that it was the cause of serious and not infrequently fatal disease. It had been stated by eminent pediatricists that only traumatisms of such great violence as to cause fractures of the skull were followed by cerebral disease; Dr. Illoway's experience contradicted this statement. No one could tell whether a fall or a blow upon the head would engender cerebral disease; in a certain proportion of such cases, the injuries were followed by grave cerebral disease and, therefore, it was the physician's duty to prevent, if possible, the grave consequences. Tumors of the brain and its coverings were not of rare occurrence in childhood. Though it was true that a very large percentage, 50 per cent. according to Read, was said to have been of tuberculous nature, there still remained a large percentage the etiology of which was as yet in total obscurity. It was not improbable that in many of these cases the first impulse to the development of a growth was a fall upon the head or a blow received in the

course of play, an accident quickly forgotten in the rapidly moving life of childhood.

In all traumatism of the head there was, if nothing more, a cerebral concussion. The brain cells might be injured and an inflammatory condition develop with a tendency to pus formation or abnormal cell growth. The treatment that was imperatively indicated was to allay all irritation as quickly as possible and to further the restoration of the injured brain structures to the normal. Any child who had suffered such a traumatism should be kept in bed. Two very important effects of calomel, not clearly set forth in the books of to-day, he called attention to, namely, (1) calomel was a most potent remedy to allay vomiting; (2) it had a decided antiphlogistic action on the brain and its coverings, as well as upon the spinal cord. It was, under the circumstances here treated of, the opium of the brain. By means of its antiphlogistic action one could effect what could not be accomplished with bromides or the various hypnotics.

NITROGEN METABOLISM IN NORMAL (ARTIFICIALLY FED) INFANTS.

DR. B. RAYMOND HOOBLER calls attention to the fact that a large part of the metabolism work has been done on sick infants and he believes that until "normal" metabolism can be defined through a study of a sufficient number of normal cases it is rather difficult to draw conclusions from a study of metabolism in abnormal cases. Among the normal cases that have been studied the large part have been infants fed on breast milk and only a small number have been fed on modified cow's milk, so few that the data is not at all convincing as to what constitutes normal metabolism in infants fed on cow's milk. The study presented is a portion of the metabolism problem which involved the determination of the nitrogen, fat, sulphur, magnesium, and calcium in the food, urine, and feces covering a nine days' period, divided into three periods of three days each. The child used for the study was a healthy, robust infant nine months of age. The child was fed on three different cow's milk mixtures, involving the use of certified whole milk, fat-free milk and 16 per cent. cream, all of which were secured from the Walker-Gordon Milk Laboratory and when modified represented a low fat, a medium fat, and a high fat formula. The child was kept on a definite formula at least two days before being put in the metabolism frame and was kept three days continuously in the frame and given the same formula, the metabolism experiment covering the last three days. After each three days in the frame the child was given a rest for ten days before being put into the frame again. The urine was collected daily and the total nitrogen, urea, ammonia, and kreatinin determinations were made the same day and also the tests for acetone, diacetic acid, and beta oxybutyric acid, and total acidity. The feces were collected in daily quantities, except in two instances when forty-eight-hour periods were

collected, dried over water-bath, pulverized, and passed twice through a No. 40 sieve and stored in glass containers until examined. The methods used for nitrogen determinations were total nitrogen by Kjeldahl, urea, ammonia, and kreatinin by Folin's methods.

The percentages of fat and proteid used were as follows: In the first group called "low fat," fat 2.1 and proteid 4.1; in the second group called "medium fat" 4.0 and 3.5 per cent., respectively, and in the group called "high fat," fats 5.5 per cent. and proteids 3.34. In the "low fat" period the child took 53.1 grams in twenty-four hours, in the medium fat period, 44.8 and in the high fat period 43.4. The nitrogen intake for the respective periods was 8.5, 7.2, and 6.9. The child weighed 7856 grams at the beginning of the experiment and gained 439 grams during the nine days. Comparing this child with the children upon whom Keller and Rubner and Heubner made similar experiments it becomes evident that their children, one three and the other seven and a half months of age, were underfed. Under the low fat feeding 3.8 per cent. of the food nitrogen was excreted; under medium fat feeding 5.6 per cent. was excreted and under high fat feeding 2.9 per cent. Whether this nitrogen was a portion of the food nitrogen ingested or whether it represented a certain amount excreted from the body into the intestinal canal cannot be definitely stated. Considering the amount of nitrogen ingested as 100 per cent. and subtracting the amount excreted, we get the amount ultimately absorbed into the body from the intestinal canal. The day to day percentage varies but little. The average was 96.2, 94.4, and 97.1 for the low, medium, and high fat periods, respectively. The average for the nine days was 95.9 while Keller's figures are 93.7 and Rubner and Heubner's are 93.5. These figures are very close considering that the body weight varied greatly, as their children were much younger. The absorption in grams was during the low fat period 0.985 gram, during the medium fat period 0.866 gram, and the high fat period 0.897 gram per kilo body weight. The study also shows the combined amount of nitrogen passed out of the body by way of the feces and urine and is obtained by adding the fecal nitrogen and the urinary nitrogen together and determining its proportion of the food nitrogen. The highest elimination in any one day was 76.8 per cent., while the lowest was 63.2 per cent. of food nitrogen eliminated by feces and urine. Another method of nitrogen excretion which must be taken into consideration is elimination by the sweat. Rubner and Heubner's case is the only one thus far worked out which includes this observation. The average amount excreted per day in the sweat was 0.186 gram or 5.2 per cent. of the entire nitrogen excreted in twenty-four hours. This 0.186 grams of nitrogen excreted in the sweat represented 4.3 per cent. of the nitrogen intake. Dr. Hoobler made no attempt to estimate the amount of nitrogen excreted

by the sweat, but it is reasonable to deduct this amount from the amount of nitrogen retained in the body. The percentage retained is found to be very low, being for the low fat period 35.3, for the medium fat period 29.5, and for the high fat period 32.8 per cent. In Keller's case in which no account was taken of the amount lost by the sweat the percentage is 34.1. The amount of nitrogen retained during the low fat period was 0.362 gram, during medium fat period 0.270 gram and during high fat period 0.285 gram per kilo body weight. In breast-fed babies the per cent. of nitrogen absorbed is about the same as in cow's milk fed babies, but the amount retained is very much higher, reaching even 85 per cent. of the food nitrogen, while the amount retained in cow's milk fed babies averages only 30 per cent.

The ammonia excretion in per cent. of food nitrogen remained low in the low fat period, but during the medium fat and high fat periods there was a very large increase reaching as high as 22.9 per cent. of the food nitrogen. Coincident with this sharp rise in the amount of ammonia nitrogen, there was found considerable quantities of acetone, diacetic acid, and oxybutyric acid. These acetone bodies appeared on the last day of the medium fat period. On the days of high fat feeding they were present in increased quantities every day. An attempt was made to put the child on a 7 per cent. mixture, when vomiting ensued, though there were no clinical manifestations during the high fat feeding period of an impending acidosis. The author makes the following observations, but thinks that one case does not warrant any definite conclusions.

1. Nitrogen is absorbed exceedingly well by healthy children.
2. The per cent. of absorption at varying ages is about the same, even though the intake of nitrogen per kilo differs greatly.
3. Nitrogen absorption is carried on equally well under low, medium, and high fat feeding.
4. The per cent. absorption varies little from day to day.
5. Nitrogen absorption is not affected by a condition of mild acidosis.

In regard to retention of nitrogen the author observes:

1. The proportion of the food nitrogen which is retained is about one third.
 2. The per cent. retained is about the same for the three ages discussed.
 3. Retention takes place in about the same per cent whether fed on low, medium, or high fat.
 4. Percentage nitrogen retained remains about the same whether fed on low, medium, or high proteid.
 5. In high proteid feeding a larger amount of nitrogen is absorbed and eliminated, thus causing more work to be performed by the infant than on a lower proteid feeding.
 6. Body weight may diminish on a fair nitrogen retention.
- In regard to nitrogen elimination it is observed that:

1. Nitrogen is largely eliminated through the urine. Considerably more than half of the nitrogen ingested is excreted in the urine.

2. A very small quantity is found in the feces.

3. The increasing per cent. of ammonia nitrogen in the urine is an index of acidosis.

DR. HERBERT BUDDINGTON WILCOX said that the question of nitrogen metabolism was particularly applicable in the use of Finkelstein's Eiwiss-milch in infant feeding. In the infant's ward at Bellevue this had been the routine diet for the last three months. The average child in the ward weighed less than nine pounds and took daily from his food, which contained 2.8 per cent. proteid, about 6 grams of nitrogen. Apparently all the nitrogen ingested must be either absorbed or excreted. The digestion has no means of avoiding the nitrogen task set it by the diet, and the working over of so large an amount for a considerable space of time must represent a metabolic strain. After from two to three weeks of such feeding every one of these children begins to have too frequent and too large, although perfectly normal, stools; at this point the infants are likely to lose in weight. It is an interesting question how much bearing the excessive nitrogen metabolism has on this intestinal condition, and whether it evidences an attempt on the part of the body to aid the elimination of the large amount of nitrogen ingested.

DR. L. E. LAFETRA said that the page of figures presented had been made very interesting by Dr. Hoobler, and that there were two practical conclusions which could be drawn from even this single case, so thoroughly worked out. In the first place, he would emphasize that, while high nitrogen feeding has its advantages, it has also certain disadvantages. For instance, in cases of diarrhea, the use of Eiwiss-milch, as, indeed, of fat-free buttermilk, permits giving food much earlier and food of a higher caloric value than has been found possible heretofore. This treatment prevents the severe loss of weight in such cases. On the other hand, there is the disadvantage of high proteid feeding that so little of the increased nitrogen is retained; only about one-third in the case of cow's milk preparations. This is in great contrast to the much larger quantity retained when breast milk is given. The retention of so little nitrogen means that high proteid feeding necessitates a greater amount of work on the part of the organism to eliminate the two-thirds of the increased nitrogen, a process which is presumably a strain on the metabolic energy of the child. If breast milk were given, of course very much less nitrogen elimination would be necessary. Notwithstanding that breast milk has a lower proteid than cow's milk, it is necessary, on account of the smaller retention of nitrogen in artificial feeding, to use a higher quantity of proteid; but extremely high proteids undoubtedly put a strain on the organism. The second conclusion to be drawn from the tables is that there is danger of acidosis from the use of high fats. Notwithstanding

that the patient showed no nervous symptoms, the urine contained evidences of acidosis, and therefore the child was in danger of a nervous explosion. This must be remembered when high fats are prescribed.

DR. HENRY DWIGHT CHAPIN said that one often observed the diarrheal stools improve in their character but the babies did not seem to gain in weight on the Finkelstein feeding. One must give the babies a high proteid diet, but apparently this did no good for they could not care for it.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Infantile Malaria.—Jean P. Cardamatis (*Arch. de méd. des enfants*, September, 1910) gives the results of his study of malaria among the children in Greece. He finds that all sorts of troubles are imputed to malaria from lack of diagnostic ability. His study is based on cases in which the malarial protozoön was found in the blood by microscopic examination. During the suckling period the child is less liable to be attacked by malaria than later in life. Up to the age of three months malaria is quite rare, increasing in frequency up to twelve months. There is a relative immunity during the first month of life. Morbidity from malaria is less up to the age of one year, probably due to the greater care taken by the mother. Malaria is especially frequent between the ages of two and three years. The author does not believe that it has been shown that the parasites can be communicated to the infant through the placenta. They are to be found on the maternal side of the placenta, but not on the infantile side. The author has observed new-born children in perfect health when their mothers were afflicted with severe malaria. In twenty cases of maternal fever the blood was examined in the mother, the fetus, the placenta and the cord, and the protozoa were never found in the cord, placenta, or organs of the infant immediately after birth. Malaria may be either acute or chronic in infants; but generally the chronic form is due to neglect in diagnosis and treatment of the disease. The disease appears somewhat irregularly in children. The chill is absent or abortive, and sweating is absent. The child becomes cold but does not have a true chill. Convulsions and vomiting are frequent. The fever lasts from three to six hours. The spleen is usually enlarged, sometimes enormously. In chronic malaria we see a true cachexia; the child has a complexion like wax, anemia is extreme, the body emaciated, and the spleen enormously enlarged.

Infantile Diabetes.—Pierre Maurel (*Ann. de méd. et clin. inf.*, September 1, 1910) says that although diabetes is uncommon among young children, still it would be found more frequently

were the diagnosis made in all cases in which it occurs. The diagnosis is especially difficult in very young children. The cardinal symptoms, thirst, polyuria, and sugar in the urine, are present, but are frequently referred to digestive disturbances and no urinary examination is made. Clinically there is the picture of severe pancreatic diabetes. The first symptom is polyuria, resulting in incontinence of urine. The child is ravenously thirsty and drinks anything he can get hold of; accompanying this is polyphagia, the nursling wanting the breast constantly. The amount of sugar in the urine is much larger in proportion than in the adult, being 30 to 80 grams per liter, or even more, on the average. The child emaciates rapidly. The disease progresses rapidly and is generally fatal in a short time. Pulmonary complications, marasmus, or acetonemia bring the end soon. The younger the child the more rapid is the disease. Coma is a frequent termination. Dyspnea with Cheyne-Stokes respiration, and agitation precede the coma. Treatment is generally unsatisfactory. In nurslings the breast is continued with a teaspoonful of Vichy after each nursing. If the bottle is used the food is sweetened with mannite, glycerin, or saccharose and Vichy is given. After weaning, milk or cream is given with gluten gruel, eggs, chopped meat, and green vegetables. The urine should be examined daily and the child weighed frequently. Good hygiene, and little physical and mental work are advised. Iron and arsenic are of value.

Radiotherapeutic Treatment of Suppurative Adenitis, Ulceration, and Fistula.—F. Barjon (*Ann. de méd. et chir. inf.*, September 1, 1910) finds the use of radiotherapy is of great value in all cases of glandular adenitis which have resulted in abscess, ulceration, or fistula. In all cases where pus is present, it is necessary to evacuate it by puncture or incision before the action of the rays will be of benefit. They will not cause absorption of pus deposits, but when the pus has been evacuated they will cause rapid cicatrization, with a flexible scar that is hardly noticeable. No unsightly scars or keloids need be left if this treatment is used. The best results are obtained when the pus is evacuated by aspiration, that is, when it is small in amount and is fluid. Here the results are perfect. From two to six irradiations are necessary. When there is a larger abscess, acute or chronic, incision is necessary. The rays then produce absorption of infiltration and edema and a good cicatrix results. Keloids become flattened and supple. Old suppurations and ulcerations heal rapidly.

Weight of Infants and its Interpretation.—Henri Bouquet (*Bull. gén. de Ther.*, September 15, 1910) considers the way to interpret the weight of nurslings. Very frequent weighings are rarely useful; it is usually sufficient to weigh the child once in two weeks. When the weight increases too rapidly the infant is absorbing too much nourishment at each feeding, or the mother's milk is too rich. Too little increase in weight would indicate

the opposite, too little or too innutritious milk. Weighing artificially fed children is of great value, in order to gauge the efficiency of the diet ordered. Variations in the weight of the child are frequently misinterpreted. A falling-off in weight does not always indicate a condition of the feeding that should give us concern. Irregularity of the hour of weighing with reference to the taking of food may cause false weight to appear, the weight on a full stomach being greater than after a feeding is digested. The time of weighing with reference to the time of feeding should be regulated by the physician. In the nursing infant as it grows older the mother has no longer sufficient milk to nourish him, and this hypolimentation causes a lessening in weight. It is then necessary to add artificial feeding. It is in this that hard and fast rules for feeding fail. The dictum that the diet should be one-tenth of the weight of a child is faulty. It may rather be necessary to give an eighth or even a sixth of the body weight per day. Too great dilution of the milk may cause decrease in weight. A change of milk may have the same effect. Irregular feeding on Sundays and holidays may account for diminution of weight. Vaccination and the irruption of teeth affects it. Heredosyphilis shows itself at birth by a loss of weight; so also does tuberculosis. The menstruation of the mother has an effect on the weight of the child. Thus we see that a loss in weight is not always to be attributed to a failure in proper feeding of the infant.

Prolonged Cerebrospinal Meningitis of Cachectic Type.—Robert Debré (*Presse méd.*, September 3, 1910) describes a form of cerebrospinal meningitis in which, after the acute stage, a remission occurs, followed by a renewal of severe symptoms, and another remission, until the patient reaches a stage of true cachexia. In each remission there remains a stiffness of the neck, and some maladroitness of movements, which makes the gait hesitating. The physic condition is changed, the patient being inattentive, forgetful, and with lessened intellectual vivacity. Fever, extreme stiffness of the neck, pains, headache, and delirium recur so as to need sedatives. Trophic troubles become marked; bed-sores, loss of flesh, diffuse muscular atrophy, sphincter troubles, and loss of motor power are marked. The skin becomes dry, wrinkled, and scaly. The only sentiment that is left is the animal joy in food. When left alone these patients are quiet, but when approached they begin to groan, and cry as soon as touched. While they are torpid they do not seem to suffer, but as soon as intelligence returns they are in agony, crying out and complaining of localized pains. The extreme stiffness of the emaciated body is striking. The neck is retracted, the arms and legs are flexed, while there is a true paresis of the limbs. There are attacks of trembling. The reflexes are diminished, the Babinski is never observed. The pupils may be unequal, and vision and hearing are affected. The duration of the disease in this form may be long, six to ten months. Often the case ends

fatally from intercurrent disease, rarely with convulsions. If recovery is to take place the relapses are wider apart, intelligence gains gradually, paresis lessens, appetite is voracious, and improvement comes gradually. This cachectic form of meningitis may be observed at any age, even in infants. The size of the head increases in young children, on account of dilatation of the ventricles. If recovery occurs this dilatation of the skull remains and does no harm. In fatal cases the hydrocephalus increases progressively. At autopsy the membranes show thickened, opaque spots, of a yellow color, zones of pachymeningitis; pus is seldom found on the brain surface. The brain substance shows no change to the naked eye, except edema and ventricular dilatation. Pus is often seen in the ventricles. The meninges are transformed into a sort of fibrillar structure, and the cerebral substance shows edema and inflammatory products. The symptoms observed are referred to the ventricular dilatation. There are alterations of the nerve roots and of the peripheral nerves as well. In these chronic cases the intraspinal injections of anti-meningococcic serum has not given as good results as in the acute cases. The needle penetrates into the false membranes and the fluid reaches only a small area of the spinal tissues. In many instances it never reaches the ventricular cavities.

Open-air Schools.—Paul Vigne (*Ann. de. med. et Chir. Inf.*, July 1 and 15, 1910) describes the open-air schools that are established in France, Germany, and England for the treatment of children in the pretuberculous stage and very early cases of declared tuberculosis, which are as yet not contagious. The school at Vernay, maintained by the city of Lyon, is established in a large mansion, in a park, and is open from May to the end of September. The children do not go home at night, but sleep in airy dormitories. There is provision for play in a large saloon in rainy weather. In pleasant weather school, play, and meals take place out of doors. The amount of fresh air and of nourishing food is doubled for each child, and the work of the school lasts but two and one-half hours a day. The day is but thirteen hours long, the rest of the twenty-four being spent in bed. There are five plentiful meals, and milk to be given warm and fresh from cows pastured on the place. Gardening and play take up the rest of the time. The school has been open for three seasons, and has accommodated about two hundred children. It has been found that all the children gained in weight, the merely run down more than the declared cases of tuberculosis, and that physical signs regressed during their treatment. In Germany there are two such schools, at Charlottenburg, near Berlin, and at Mulhouse. But these are located in barracks, and the patients go home at night. The character of food and school work are much the same as at Vernay. Here no cases of declared tuberculosis are taken, but only the anemic and run down cases. In England there are three similar establishments. The author thinks that the plan used in Germany and England will suffice

for pretuberculous cases, but that of Vernay is best for incipient cases.

Unexpected Results of Treatment of a Syphilitic Child by Injection of its Mother with "606."—Karl Taege (*Münch. med. Woch.*, Aug. 16, 1910) recounts the treatment of a new-born baby of a syphilitic mother, through the milk of the infected mother. The child was weak, apathetic, and hardly able to cry. After the injection of the mother improvement of the child began at once. It became rosy and strong, cried aloud, and nursed normally.

Robert Duhot (*Münch. med. Woch.*, August 30, 1910) reports the case of an infant born with hereditary syphilis, in whom an absolute disappearance of all symptoms was obtained by the treatment of the mother with an injection of "606." This was an altogether unexpected result. The action of the drug was carried in some way to the child through the mother's milk. The mother had been rebellious to mercurial treatment, and was subject to severe ulcerations. Her child was born with red, wrinkled skin, and the appearance of an old woman; the cry was weak and suckling was difficult on account of snuffles. A few days after birth syphilitic pemphigus appeared. The mother was injected with 0.5 gm. of "606." Three days after the injection the appearance of the child began to change. The skin lost its redness and became soft and white; the eruption vanished, as well as the nasal catarrh. The child was soon a rosy, blooming baby, and gained rapidly in every way. It has been questioned whether even better results would not have been obtained by a direct injection of the child. Injection of the infant syphilitics has just as good an effect on the symptoms, but unfortunately the amount of toxin that is liberated by the death of the organisms causes it to fall and die. Ehrlich has warned us of this result. It is believed that the antitoxin produced in the blood of the mother is communicated to the child by way of the milk, through which a neutralization of the toxins takes place. We must always consider that the unkilld spirochetes may revive and renew the symptoms. Therefore, it is wise to inject the child, as soon as it seems allowable, with a small amount of the drug. The Wassermann reaction will be of use here. The best method of treatment of a nursling is by treating the mother and allowing the milk to do the work of cure.

Treatment of Congenital Syphilis with "606"—After having treated sixty cases with "606," J. E. R. McDonagh (*Brit. Jour. Child. Dis.*, Oct., 1910) has found that a bigger dose is required to heal an early chancre than to completely cure a case of extensive gummatous ulceration, for instance, in a congenital syphilitic; therefore one is justified in assuming that the cure is largely due to the amount of antitoxin formed, and those cases which have severe syphilitic lesions, such as extensive ulceration of the pharynx and larynx and meningitis are very ill for a few days after the injection, have high fever, and sweat profusely. It is

not, therefore, to be wondered at that tiny infants have succumbed after an injection.

Appearance of Spirocheta Pallida in the Vaccine from Congenitally Syphilitic Children.—Joseph Langer (*Münch. med. Woch.*, Sept. 20, 1910) recalls the numerous cases of syphilis appearing after vaccination with human lymph in former times. The primary sore appeared in the location of the vaccination pustule. Secondary syphilis appearing after vaccination would show that a latent syphilis existed. The author finds records of 800 cases of vaccination syphilis. Yet this is a small number considering the number of vaccinations that are made each year. When the lancet was used in vaccination we can easily see how the spirochetes were carried. The author made observations on ten syphilitic children aged from ten days to eighteen months, all of whom had marked syphilis, and all had enlargement of glands and spleen and maculopapular exanthemata. All were vaccinated. On the sixth or seventh day after vaccination the author took from the pustule of three children a small amount of the contents of the vaccine bleb. In only one case at this period were spirochetes found in the pus. Out of seven others they were found in four. Some of these cases were under treatment with mercury. In one child who had a syphilitic eruption he vaccinated a small bleb on one arm, and a small incision on the other. In the pustule vaccinated on a syphilitic pustule were spirochetes, in the other pustule they were not found. The author concludes that spirochetes are found in the vaccination pustule only when it is situated in previously infected skin. In latent syphilis they are found only when the skin is already affected by syphilis.

Treatment of Diabetes Mellitus in the Child.—Marius Lauritzen (*Arch. de méd. des enfants*, August, 1910) says that in changing the diet in diabetes mellitus in children, as well as in adults, it is necessary to test the carbohydrate tolerance. For this purpose he uses a diet consisting of 30 to 50 gm. of rice cooked in milk, 25 gm. fish, 100 to 200 gm. potatoes, and 25 to 75 gm. bread, according to the age of the child. The urine of the twenty-four hours is collected and tested. If there is a marked increase of sugar under this diet antidiabetic diet must be begun. The diagnosis should be established as early as possible, since this is a peculiarly fatal disease in childhood. In families in which there is diabetes or nutritive maladies the urine should be frequently tested for sugar. If there are furuncles, acne, or pruritus it should be tested at once. The prognosis in light cases treated early is better than in severe cases, or those which have been going on some time without treatment, where nutrition is feeble and acidosis is present. The author thinks that trauma has little to do with the causation of diabetes. In mild glycosuria the sugar disappears quickly under a diabetic diet. In a second grade of cases it disappears only when both carbohydrates and albuminoids are reduced. In severe cases no diet removes

sugar entirely. In the beginning of a severe case the child must have mental and physical rest, with massage. When sugar is absent walking in the fresh air is allowable. Medicines are necessary only for the treatment of complications. Alkaline therapy is important. The study of the relations of albumin in the diet to glycosuria has shown that proteids as well as carbohydrates may be reduced with advantage in order to check the excretion of sugar, provided that a liberal quantity of fats is given. The albumin of meats and milk has more influence upon sugar excretion than that of eggs and of vegetables. Oatmeal soup has given excellent results in some cases, which cannot be easily explained. Acetonuria occurs early in children; those who take a meat and fat diet have acidosis earlier than others. Carbohydrates combat acidosis, which is said to come from albumin and fats. It is to combat acidosis that the alkaline treatment was introduced. The author varies the diet: for a week severe diet, then a day of vegetables, then a few days of oatmeal diet, then two or three days of vegetables, then again severe diet.

Oatmeal soup should have butter added and lemon juice is useful. In children under two years a milk diet is used. In older children a more severe diet is necessary, varied frequently.

Fractures of the Femur in the Course of Ankylosis of the Knee.—E. Kirmisson (*Bull. med.*, Aug. 13, 1930) shows by a clinical case how a partial ankylosis of the knee may result in a fracture of the femur. In the child mentioned there was a general arthritis with deformity, and an ankylosis of the left knee. The joint disease followed scarlet fever at five years of age, and the patient was now eleven years of age. The left knee was much atrophied, and was the seat of a dry arthritis. The entire leg was atrophied and there was a permanent flexion of the leg on the thigh. Movements of flexion and extension of 12 or 15 degrees were possible. An arthritis causes an early disappearance of the fibers of the quadriceps muscle. Since the most powerful flexor is the biceps the result is adduction and rotation outward. Radiography and examination both showed in this case a united fracture of the lower extremity of the femur, with overlapping of the two fragments. This resulted from a fall. In eleven cases such a fracture of the femur had been noted in patients with ankylosis of the knee. This has relation with the contractions of the muscles, which makes the joint part of a rigid lever; it is the bone that yields, not the ligaments. Another cause is the trophic changes in the neighborhood of the joint which make the bones abnormally fragile.

Painful Flat-foot.—E. Kirmisson (*Bull. méd.*, Sept. 3, 1910) says that flat-foot is not uncommon in children. The muscular and the osseous theories of flat-foot are not accepted by the author. According to him the cause of the trouble is articular or ligamentous; the ligaments become relaxed and allow the arch to fall. The weight of the body cannot be supported by the relaxed ligaments. Arthritis and tarsalgia follow. The author rejects

the theory that falling of the arch is a result of tuberculosis. This is quite impossible to demonstrate. Many cases of flat-foot are not painful; tarsalgia is the exception.

Topography of Pulmonary Localizations in Infantile Pneumonia.—E. Weill and G. Mouriquand (*Ann. de. méd. et chir. inf.*, Aug. 15, 1910) say that in the course of their investigations of primary pneumonic hepatization they have been struck by the frequency of certain localizations in children. The pneumococcus does not impartially attack any location in the lungs, but most frequently consolidates the left base and right apex. After this comes the right base, and least frequently the left apex. Out of 240 cases only forty were not localized; eighty-two times the left base was involved; sixty-four times the right apex; thirty-nine times the right base; fifteen times the left apex. Radioscopy shows with especial plainness the localization at the apices, especially the right. Here there develops a triangle of hepatization with its base in the axilla and the summit at the hilum of the lung. Its position determines the fact that it cannot be demonstrated by the stethoscope alone, without the aid of the radioscopic examination. In thirty-two cases examined radioscopically such an area was found in twenty-six. A primary basilar triangle exists in some cases, but it is less marked and less quickly formed.

Case of Ano-rectal Imperforation in a Premature Child.—Ch. Remy and Bloch-Vormser (*La Gyn.*, Sept., 1910) report the case of a premature infant which was born with imperforate anus. Laparotomy was performed; the parts of the intestine were united, and the abdomen was closed. A very few minutes were required for the operation. For this reason the patient was able to survive the operation and was alive at the time the case was reported. This malformation in the new-born has been considered inoperable, on account of the weakness of the child. This is the first successfully operated case on record. The authors think we should not be pessimistic in such cases, but should immediately undertake laparotomy. The abdominal opening gives plenty of light and space to see what are the conditions present, and this is of great advantage. When we can operate in a few minutes the shock is minimized and the interference with the functions of the child is slight. This infant never interrupted its nursing. The interval between the two parts of the intestine was very short and they were easily united. After operation the resulting constriction of the bowel was gradually dilated and made permanently patent. The hemorrhage was practically *nil*.

Significance of Tuberculides in Diagnosis of Tuberculosis in Infancy.—J. S. Leopold and T. Rosenstein (*Jour. Amer. Med. Assn.*, 1910, IV, 1721) state that papulosquamous and papulonecrotic tuberculides are present in a large percentage of cases of tuberculosis in infancy. They were able to find these lesions in 40 per cent. of thirty cases of tuberculosis in infants which were under observation in the Städtischen Kinderasyl, Berlin. In

four of the twelve cases the tuberculides were the only evidence of tuberculosis present, but in all these the von Pirquet reaction was positive in children between three weeks and two and a half years of age, and in one the diagnosis was subsequently confirmed by an autopsy. The writers regard the tuberculides as of great diagnostic value in tuberculosis in infancy. As they have their characteristic appearance, however, in a few days it is necessary to have the patients under constant observation.

Antiinfectious Power of Blood of Infants.—The studies of R. Tunnicliff (*Jour. Infect. Dis.*, 1910, vii, 698) appear to show that at birth the opsonic power of the blood serum toward streptococci, pneumococci, and staphylococci is a little less than that of adult serum. It falls still lower during the first months of life and does not equal the opsonic power of adult serum until about the second year. The phagocytic activity of the leukocytes of infants toward streptococci, pneumococci, and staphylococci follows a course similar to that of the opsonic indices. The leukocytes at birth are a little less active than those of the adult. Their activity diminishes considerably during the first months of life and does not reach that of adult leukocytes until about the third year. The phagocytic power of the whole blood of infants drops decidedly during the first and second months of life and does not reach that of adult blood until about the third year. During the first and second years of life the antiinfectious power of the blood as measured by the opsonic power of the serum and the phagocytic power of the leukocytes is thus shown to be far below that of adult blood.

Nitrogen Metabolism in Healthy Infants.—Comparing his own figures obtained in a study of the nitrogen metabolism of a healthy, artificially fed infant of nine months with those of two other observers, B. R. Hoobler (*Arch. Ped.*, Nov., 1910) finds that nitrogen is absorbed exceeding well by healthy infants fed on cow's milk mixtures. The percentage of absorption at varying ages is about the same, even though the intake of nitrogen per kilo differs greatly. Nitrogen absorption is carried on equally well under low, medium, and high-fat feeding. The absorption percentage varies little from day to day. The proportion of the food nitrogen which is retained is about one-third. The percentage retained is about the same for the three ages discussed. Retention takes place in about the same per cent., whether fed on low, medium, or high fat. Percentage nitrogen retained remains about the same, whether fed on low, medium, or high proteid. In high-proteid feeding a larger amount of nitrogen is absorbed and eliminated, thus causing more "work" to be performed by the infant than on a lower proteid feeding. Body weight may diminish under a fair nitrogen retention. Nitrogen is largely eliminated through the urine. Considerably more than half of the nitrogen ingested is excreted in the urine. A very small quantity is found in the feces. The excretion of ammonia nitrogen was higher on "high-fat" mixtures than on "low-fat" mixtures.

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ORIGINAL COMMUNICATIONS.

A BRIEF ANALYSIS OF NINETY CASES OF PUERPERAL
ECLAMPSIA AND A CRITICAL REVIEW OF THE
TREATMENT OF THIS DISEASE.*

BY

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WITHIN the last few years the dictum "empty the uterus as soon as possible in every case of puerperal eclampsia no matter at what period of gestation" has gone forth. This position is still held by the distinguished obstetrician, Bumm, of Berlin, and other eminent European authorities. With the exception of Hirst's, all recent obstetric text-books of this country recommend this treatment of puerperal eclampsia as the most important feature in the management of this disease. McPherson, of New York, lately reported 250 cases of puerperal eclampsia, and takes the position that the best treatment of puerperal convulsions is to empty the uterus promptly. This is not good teaching. To counteract the tendency to surgical intervention in every case of puerperal toxemia, I beg leave to present a brief analysis of my own experience with this obstetric complication.

During the thirty-five years of my practice, ninety cases of Puerperal Eclampsia have come under my observation. Of these, thirty were my private patients treated at their homes; forty-four were consultation cases; thirteen were treated at the Ohio Maternity Hospital and Out-door Obstetric Clinic

*Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists, held at Syracuse, September, 20-22, 1910.

of the Medical Department of the University of Cincinnati, two at the Good Samaritan Hospital and one at the German Hospital.

From 1875 to 1888, as a general practitioner, I saw ten cases; from 1888 to 1896, as Chief of the Out-door Obstetric Clinic, twenty-eight cases; from 1896 to 1910, as head of the Obstetric Department of the University of Cincinnati, fifty-two cases.

Prior to the year 1903, my method of treatment of puerperal convulsions did not differ materially from that recommended in text-books and generally endorsed by the profession. It consisted, principally, of chloroform-inhalation during the attack, catharsis per os or per rectum as soon as it could be effectually administered, hot baths, hot packs, and chloral per rectum. Venesection in two cases, morphia in large doses in one case, emptying of the uterus by the use of forceps or version and immediate extraction of the child if the patient was in labor, were resorted to. Manual, metal, or balloon dilatation, deep cervical incisions, or vaginal Cesarean section if the end of term was not near and labor not apparent, were also employed. Norwood's tincture of *veratrum viride* was also frequently given but invariably in connection with other drugs, and never in the large doses as recommended fifty years ago by Baker, and since then by Reamy and a few others. Though a pupil of Prof. Reamy and knowing his method of using *veratrum viride* in puerperal eclampsia, I was aware that the profession of Cincinnati, as well as that of the entire country generally, was highly prejudiced against the physiological action of this drug. Consequently, I was very timid in the use of this remedy, notwithstanding the fact that Roberts Barthelow, then in the zenith of his fame as a practitioner, lecturer, and medical writer, strongly recommended this drug with the statement that excessively large doses had been taken, accidentally, without fatal or even untoward results.

It was not until 1903, after I had observed sixty-four cases of puerperal eclampsia with a maternal mortality of 40 per cent., and a fetal mortality of 50 per cent. that I determined to give Norwood's tincture of *veratrum viride* a thorough trial.

From 1903 to the present time twenty-six cases of puerperal eclampsia have come under my observation with a maternal mortality of but 15.78 per cent., and a fetal mortality of 53.88 per cent.

ANALYSIS OF THE FIRST SIXTY-FOUR CASES.

Of the sixty-four women treated prior to 1903, forty-eight or 75 per cent. were primiparæ; sixteen or 25 per cent. were multiparæ. Eighteen or 28 per cent. were unmarried.

In twenty of these patients, the convulsions occurred three times during the seventh calendar month; seven times during the eighth month; ten times during the ninth month.

In forty-two cases the convulsions supervened eight times during the eighth month; thirteen times during the ninth month; and twenty-one times at the end of term.

In one case the convulsive seizure occurred immediately after the expulsion of the child; in another case, an hour after labor. The antepartum convulsive seizures were observed from one to five times in ten cases, from five to ten times in five cases, from ten to fifteen times in three cases, from fifteen to twenty times in two cases. The intrapartum convulsions occurred from one to five times in three cases, from five to ten times in fifteen cases, from ten to fifteen times in twelve cases, from fifteen to twenty times in eight cases, from twenty to twenty-four times in four cases.

The postpartum attacks occurred only once in one case and twenty-four times in another; in the former, both mother and child lived; in the latter the mother died at the end of twenty-four hours.

Eleven of the above sixty-four cases were in my care three to five weeks before the eclamptic attacks. In each of them prodromal symptoms were noticed from several days to three weeks prior to the convulsive seizure. Strict prophylaxis had not been observed in any of them. In most instances, before as well as after the symptoms had manifested themselves, the diet prescribed was not strictly adhered to and, in some cases, hot baths could not be given and the hot pack and other modes of securing diaphoresis were inefficiently administered. A slight albuminuria, with moderate swelling of the extremities and edema of the external genitalia were the earliest and most frequent symptoms. Anemia, tinnitus aurium, severe headaches, dimness of vision, etc., were marked in two cases only. All of the remaining fifty-three cases were treated either by myself, the attending physician, or the midwife, after one or several eclamptic seizures had taken place. Not one of them had had prophylactic care. Treatment began

with or after one or several attacks and was continued, with more or less regularity and vigor, until the patient either recovered or died.

The maternal mortality of the antepartum convulsions was 45 per cent., nine out of twenty mothers died; the fetal mortality was 65 per cent., thirteen out of twenty children died.

The maternal mortality of the intrapartum convulsions was 28.75 per cent., twelve out of forty-two mothers died; the fetal mortality was 38.95 per cent., sixteen out of forty-two children died.

The maternal mortality of the postpartum convulsions was 50 per cent., one out of two mothers being lost; the fetal mortality was nil as both children lived.

Thus the total maternal mortality of the above sixty-four cases is 34.37 per cent. The fetal mortality is 45 per cent.

It is freely admitted that, while at least in fourteen cases the severity and frequency of the convulsions may be held responsible for the fatal issue, in not a few rapid manual and metal dilatation followed by immediate extraction of the child, too much chloroform, morphia, chloral, brisk catharsis, excessive diaphoresis, and occasionally hemorrhage and sepsis were contributory causes to the unfortunate results. The writer feels compelled to acknowledge that in the management of these sixty-four cases, he relied too much upon the teachings of the various text-books and the opinions of his seniors in practice and, in his anxiety to save his patient from the destructive influences of the disease, he overwhelmed them with drugs, with too many hot baths and hot packs and too frequent, early operative interruption of pregnancy.

ANALYSIS OF THE LAST TWENTY-SIX CASES.

Of the twenty-six cases which have come under my observation since 1903, eighteen were seen in the private practice of other physicians, or in my own practice, both in the city and in the country; five of them were treated in the Ohio Maternity Hospital and Out-door Obstetric Clinic of the University of Cincinnati, two were treated at the Good Samaritan Hospital and one at the German Hospital.

Of these twenty-six cases, twenty were primiparæ, seven were between the ages of sixteen and twenty, four were between the ages of twenty and twenty-five, five between the ages of twenty-five and thirty, three between the ages of thirty and thirty-five,

one was over forty years of age, eighteen of them were unmarried. The ages of six multiparæ were, respectively, twenty-three, twenty-four, twenty-six, twenty-nine, and thirty-six years. Of these, two were II-paræ, two were III-paræ, one a IV-para and one a VI-para. All of the multiparæ, except one II-para aged twenty-nine, were married.

In seventeen cases premonitory symptoms, more or less characteristic of puerperal toxemia, were present from two to eighteen days prior to the eclamptic seizures. Seven cases were not under observation prior to the attacks, and two appeared to be in perfect health up to the very hour in which the convulsions set in.

Antepartum convulsions were observed in eight of the patients; during the seventh calendar month, in two cases; during the eighth calendar month, in one case; during the ninth calendar month in five cases.

Intrapartum convulsions were noted in eighteen patients; during the eighth calendar month in four cases; during the ninth calendar month in six cases; at the end of term, in eight cases.

The number of antepartum convulsive seizures were from one to five attacks in two cases, from five to ten attacks in four cases, from ten to fifteen attacks in two cases.

As observed the intrapartum seizures were from one to five attacks in nine cases, from five to ten attacks in seven cases, from ten to fourteen attacks in two cases.

Postpartum convulsions, strictly speaking, were not observed except in three cases in which the intrapartum attacks continued after the child had been born. In one case there was one attack; in one case, two attacks; in one case, five attacks. Labor was spontaneous in all of them, and the three children lived. In the first case one convulsion occurred during the second stage of labor; in the second case two convulsive seizures took place intrapartum; and the third case had four attacks before the child was born. These three patients were first seen by me after the second stage of labor and in none of them was veratrum viride given until the placenta had been expelled. No convulsion occurred in any of the patients after the pulse had fallen to 60 per minute or lower and all lived.

Because of the frightful maternal mortality of the sixty-four cases treated prior to 1903, I determined to give veratrum viride a thorough trial and to employ it as recommended by Baker, Reamy, and others in conjunction with the moderate use of hot

baths, hot packs, strict milk diet, and free but not exhaustive catharsis. In every case, no matter how many convulsions the patient had had, 20 drops of Norwood's tincture of veratrum viride were given hypodermically and repeated every hour until the patient's pulse was reduced to 60 per minute. When the pulse showed a tendency to rise again, another dose of from 10 to 15 drops was administered and repeated every hour until the pulse was again down to, or below, 60. As long as the pulse remained at 60, or a little less, the veratrum viride was withheld; but as soon as the number of beats increased, another dose of from 10 to 15 drops was promptly given, occasionally per os, but usually under the skin.

In some cases the patients responded promptly to the action of the medicine. In one case after the patient had suffered fifteen attacks, in another after eleven attacks, in a third after nine attacks, a single injection of 20 drops of Norwood's tincture of veratrum viride was sufficient to bring the patient's pulse down to 60. In none of these three patients did the convulsions recur after the first injection had been given, the repeated smaller doses were necessary to keep the pulse down. With the aid of milk diet, one hot bath and hot pack daily, and moderate catharsis, these three patients recovered promptly and delivered themselves spontaneously within three to six days. In one instance, the child was born alive within seventy-two hours. In this case the first large injection and a number of smaller subsequent doses were made after the fifteenth convulsive attack. In the other two instances, the children were born dead, life having been extinct some time prior to birth.

In some of the cases, two and even three 20-drop doses had to be given every hour to overcome the enormous blood-pressure and the rapidity of the heart's action. A continuation of the veratrum viride, in smaller doses, repeated at varying intervals for days and weeks, was required in several instances to keep the patient's pulse at 60 per minute. In one case (Dr. Rowe's), a primipara, æt. twenty-four, the convulsions began at the end of the seventh calendar month. The veratrum viride was given three to four times daily in doses of ten to fifteen drops, in conjunction with milk diet, one hot bath and one hot pack daily, for a period of nearly two months. The patient was edematous from the soles of her feet to the top of her head; the urine was loaded with albumin and full of all kinds of renal casts; but at my request the veratrum viride, milk diet, hot

baths and gentle catharsis were continued in spite of the urgency of the symptoms. This patient delivered herself of a dead child about the middle of the ninth month and recovered completely after a slow convalescence of several months' duration.

In another case (Dr. Webb's) the patient, *æt.* twenty-one, I-para, had nine convulsions within six hours. The bladder contained only a few drops of thick, heavily albuminous urine and renal casts of every description. She had been unconscious for two hours when I first saw her. Temperature 105°, pulse 150. The first injection of 20 drops of Norwood's tincture of *veratrum viridi* promptly reduced the pulse to 60 per minute. The patient was at once transferred to the Ohio Maternity Hospital where she received, immediately, a hot bath followed by prolonged hot pack. After that, consciousness returned, kidneys and bowels began to act, and with only one hot bath daily thereafter, milk diet, and gentle catharsis this patient delivered herself of a dead eight-months' child five days after the first large dose followed by several smaller doses of *veratrum viride*.

In the third case (Dr. John Miller's) a II-para, *æt.* thirty-seven, seen quite recently at the Good Samaritan Hospital, I found the patient unconscious after the seventh attack. Temperature 101°, pulse 90. This patient had been, apparently, in perfect health, very strong and robust, up to the hour of the onset of the eclamptic seizure. The urine, loaded with albumin and casts, was very scant and of a dark brown color. Chloroform had been administered during each attack. Duration of the gestation eight months. No labor pains. Os tightly closed. Upon consultation it was determined to depend on Norwood's tincture of *veratrum viride*, hot baths and hot packs, milk diet, and gentle catharsis. This patient delivered herself spontaneously of a dead child on the fourth day after the convulsions and made a rapid recovery.

Of the twenty-six cases just analyzed, only four mothers were lost (15.38 per cent.). Of the twenty-six children, fourteen were lost (53.88 per cent.). Two facts are thus made apparent: noninterference with gestation and a strict medical treatment of puerperal eclampsia decreased the maternal mortality more than 50 per cent., while the fetal mortality shows a comparatively small but distinct increase. With the abandonment of violent interruption of gestation and the various surgical methods of treating puerperal eclampsia and substituting a less multiform,

more gentle and expectant mode of procedure, aiding labor, rather than inducing it or violently interrupting pregnancy, the maternal mortality has been strikingly reduced even though, it appears, somewhat at the expense of the fetal mortality. But the latter may be more apparent than real.

Of the four mothers lost, two died undelivered, respectively during the seventh and eighth months of gestation and within three to twelve hours after the first convulsion. One remained unconscious after the first, the other after the seventh attack. One had eleven and one had three paroxysms. Both were moribund when first seen by the writer. Of the other two, one died of shock and hemorrhage, the result of a protracted and violent attempt at delivery by a colleague of good repute. This patient expired one-half hour after my arrival and should, in reality, not be incorporated in my list of cases. The second died in consequence of an accouchement force which I was compelled to do for the reason that the patient lived far out in the country, ten miles from the nearest doctor and in the most unfortunate and unfavorable environments. The message was, "Come as soon as possible and be prepared to do a Cesarean section." Upon my arrival I learned the nature of the case. Under the circumstances Cesarean section (not considering other contra-indications) would have been a fatal procedure. It was impossible to convey the patient to a hospital. Seventeen convulsions had preceded my visit. The patient, aet. nineteen, primipara, seven months pregnant, was unconscious, very anemic and edematous. Temperature 104.2°, pulse 160. No urine in the bladder. The doctor and the family were extremely anxious to have an operation performed without delay as, in their opinion, that was the patient's only chance of life. The physician in the case had firmly impressed this upon the family. As the patient was evidently doomed, rather than be damned for not interfering, I took the bull by the horns and proceeded without much ado to make a vaginal Cesarean section, which is one of the quickest and gentlest modes of emptying the uterus at this period of gestation. The operation was easily performed and delivery promptly accomplished. The child was born alive, but died within six hours. The mother never regained consciousness and died within one hour and forty minutes after the operation, probably of hemorrhage or edema of the brain. The operation was performed without an anesthetic. This unfortunate woman had received seven hypodermics of 1/4 gr. of morphia each, and

chloroform had been liberally administered during every convulsion.

The third patient died of septic infection one week after the last (ninth) convulsion. This patient was brought, in an automobile, a distance of twenty-three miles, to the Ohio Maternity Hospital. She was a primipara, æt. twenty-six, pregnant seven and a half months, well built and muscular, but very anemic. There was considerable edema of the lower extremities and of the external genitalia. Temperature 102°, pulse 115. Two attempts at delivery with the fingers and with the balloon had been made within the last twenty-four hours. The balloon was still *in situ* when the patient arrived at the hospital. She was conscious but very much frightened. After a full bath and sterilization of the parturient tract, she was found to be in labor, the os almost fully dilated, the membranes ruptured, and the child dead. The death of the child must have occurred some time before the arrival at the hospital, as the skin of the fetus peeled off readily. Forceps were applied under chloroform. No laceration of either cervix or perineum. After a copious intrauterine irrigation of a 1 per cent. solution of lysol, she was placed in bed in fairly good condition. The patient died, however, of a profound septic infection, one week after delivery.

The fourth (Dr. Bange's case) æt. thirty-three, III-para, very strong and robust, pregnant eight months. She had only one convulsion of long duration from which she never regained consciousness, dying within three hours of the attack with all the symptoms of cerebral hemorrhage.

The principal causes of the high fetal mortality in the last series of cases must be sought in the prematurity of the births and the toxicity of the maternal organism.

In relating my personal experience with puerperal eclampsia, no attempt has been made to speak of the etiology or pathology of the disease. Nor have all the remedies employed in the treatment of this affliction been mentioned. We know something of the causes, but precious little of the character of the poison or its origin, notwithstanding the extensive and continued investigations by good men the world over. Nor has it seemed to me proper to consider on this occasion all the remedies suggested and used from time to time. It is hoped that the discussion will bring out much that the writer has left unsaid. The sole object of this paper is to record the author's experiences

and the deductions he has drawn from them. The latter are as follows:

1. All cases of puerperal eclampsia are not alike; much depends upon the extent the kidneys and liver are involved. The so-called "malignant form," as the term implies, is fatal from the beginning; the so-called "benign variety" ends in recovery, sometimes in spite of the treatment adopted. The variety of "mean gravity" is, without doubt, favorably influenced in its course by careful and judicious treatment.

2. The prognosis for both mother and child is much worse when the convulsions supervene during pregnancy, the maternal mortality ranging between 35 to 50 per cent.; the fetal mortality, between 65 to 75 per cent. The prognosis of intrapartum convulsions is more favorable, maternal as well as fetal, and amounts to about 25 per cent. The maternal mortality of postpartum convulsions is, as a rule, about 7 per cent.. (In my own experience, having had but two cases, it is 50 per cent.)

3. The most important treatment of puerperal convulsions is prophylaxis before the appearance of symptoms as well as before the eclamptic attacks when prodromal signs exist. The patient must be protected from injury during the convulsions and the duration and frequency of the paroxysms should be controlled and abbreviated, medicinally rather than surgically. *Veratrum viride* in sufficiently large doses is the remedy *par excellence* to reduce the blood-pressure and the pulse frequency. Hot baths and hot packs judiciously employed, and free but not excessive catharsis, strict milk diet and the recumbent position, are of almost equal importance.

4. Chloral in large doses per rectum, if the patient is very restless during the interval of the attacks, is an effective remedy. Chloroform inhalations, especially if of long duration, should be regarded as a source of great danger: the same may be said of frequent and large doses of morphia, both of these drugs have their ardent advocates.

5. The antitoxin treatment (the thyroid, parathyroid extract and nephrin) may play an important part in the future in the treatment of eclampsia. "What advance should *veratrum viridi* and nephrin and parathyroidin prove, some day, to be synergetic!" (Archambault.)

6. Saline and sugar-water instillations can do no harm and may do a great deal of good.

7. If, of late years, the maternal mortality of puerperal eclampsia has been reduced at all, it is the direct result of careful prophylaxis and intelligent medical care. Surgery has contributed very little to it. The dictum "Assist in labor, but do not induce it" or "Treat the convulsion and let the pregnancy take care of itself" is better than the dictum "Empty the uterus as soon as possible in every case of puerperal convulsions no matter what the period of gestation."

8. Decapsulation of the kidneys, manual, balloon, and metal dilatation, especially the old-time accouchement forcé are, in the opinion of the writer, hardly justifiable and should have no place in the treatment of puerperal eclampsia.

9. If, however, the symptoms are very threatening and the medical care above described fails to bring about promptly an amelioration in the patient's condition, an early delivery may be desirable; if the patient be near term, but not in labor, the conservative Cesarean section should be selected; if the patient is just within the period of viability, vaginal hysterotomy is the proper procedure; if the fetus is not viable (before the end of the sixth month of gestation) deep cervical incisions will easily relieve the uterus quickly of its contents.

10. No one has a right to perform any of these three operations unless experienced and familiar with the technic of each. And, in every instance, the patient must have the benefit of strict asepsis. Without these requirements, it is best to rely entirely upon the medical care above outlined.

Dr. Wm. Gillespie, of Cincinnati, was kind enough to furnish me with a brief synopsis of his experience with veratrum in eclampsia.

He has had eighteen cases in which the toxemia was of sufficient severity to immediately threaten life. All yielded to veratrum as soon as an adequate dosage was given. In no instance had he noted convulsions which were not under control within thirty minutes. The dose given has varied from 50 m to 120 m. of Norwood's tincture, administered subcutaneously, but it has seldom been necessary to go beyond 1 dram, unless its antidote, morphia, had been given. He has had but four fatal cases (22 per cent.), two in the first half and two in the last two months of pregnancy. One of the early and one of the later cases had convulsions. In both of these veratrum promptly relieved the convulsions, but in one, the toxemia increasing, Dr. Bonifield emptied the uterus. This patient died. The

other case of early toxemia was associated with persistent vomiting, which finally yielded. The patient died, when about 5 months advanced, with symptoms of cerebral edema, which were not improved by artificial emptying of the uterus.

Of the later cases, one had been in serious danger from an attack of nephritis some months before the pregnancy began. When he first saw her she was within seven weeks of the calculated time of delivery. A day or two later she telephoned him that her head was paining her severely and upon going to her home he arrived in time to see her go into convulsions. The convulsions were immediately controlled by veratrum. Seven weeks later labor ensued. During this whole time her general condition improved under the constant administration of veratrum, so much so, that he did not feel justified in inducing labor. She was having an easy labor until the first expulsive pain occurred, when she was taken with a tetanic spasm which did not relax until life was extinct. The child was extracted with forceps and appeared to be normal, but twelve hours later it died in a convulsion which was described by the nurse as identical with that of the mother.

The other case suffered from tuberculosis before the development of toxemic symptoms. Urine loaded with albumin and casts, general edema and asthma with pulmonary edema. Veratrum relieved the bronchial spasm, the pulse becoming slow and full, the cold extremities warm and less edematous. Urinary findings remained the same except that the quantity excreted was increased. This fact and the improved general condition of the patient was sufficient to justify a policy of expectancy even if it had not been re-enforced by the religious scruples of the patient. One morning he was called to find her with congested lungs and copious expectoration of blood-tinted froth. An hour later, in his absence, she suddenly died with every symptom of edema of the glottis.

This completes his experience with fatal cases of toxemia of pregnancy and in none of them is there any reflection upon the drug employed.

In the remaining cases he has seen everything from the slight convulsion, followed by a period of perfect consciousness, to the rapidly recurring violent seizures and gradually deepening coma. His invariable rule is to use 25 m of Norwood's tincture of veratrum (or preferably "Veretrone" because of its greater reliability and the less irritation produced) followed by

15 m. every ten minutes until the patient is brought profoundly under the influence as indicated by the slow soft pulse, sighing respiration, and copious vomiting of bile-stained fluid. Unless these symptoms are produced, the full benefits of the drug have not been experienced; if these symptoms are produced convulsions cease and will not recur so long as the arterial tension remain low. It is a clinical fact, however, that after four hours have elapsed the arterial tension and pulse rate may mount very rapidly, and these are danger-signals which should be met by the immediate vigorous application of the drug.

Because of these facts it has, of recent years, been his custom to give 15 m. of Norwood's tincture every four hours beginning three or four hours after he has stopped the convulsions. If the patient does not need it, it is soon thrown up and serves to keep the liver on the job of toxin destroying. As the dangers of eclampsia are not passed for two weeks after labor this administration of the drug by the mouth is never discontinued for that length of time, though the dose may be lessened if no danger signals appear and the stomach is kept upset by them. But as prevention is always more important than cure, he who only uses veratrum after the onset of convulsions fails to reap its full benefit.

At the first appearance of albumin in the urine he is in the habit of giving the drug in sufficient doses to lessen the arterial tension and continues it to the completion of pregnancy. The dose varies from 8 m. to 15 m. every four hours and, of course, is accompanied by rest, diet, etc.

The functional activity of the kidney is usually increased and the percentage of albumin is diminished after its administration. Like myself he has seen several cases where the toxemia resulted in the death of the child, yet nearly all of his cases in which the pregnancy continued for some time after the onset of toxemic symptoms, have been delivered of perfectly healthy children.

The death of the child has generally been followed by prompt improvement in the symptoms of the mother, but this can not always be regarded as cause and effect. There is ample evidence scattered through the literature of this disorder to show that an acute toxemic storm usually lasts in its full intensity not more than forty-eight hours. Some children will die within this period, more will be prematurely expelled, but if the dangers are warded off until this period is past, there is usually a general improvement in the patient's condition even though the pregnancy continues. For this reason he never forces labor, preferring

to obviate the immediate dangers, and to await a safer time for action. As a result of this policy, many of his patients have delivered themselves within twenty-four hours of the onset of convulsions, and in many cases the labor was so easy that it was only recognized when the external parts began to distend. Since recognizing the full significance of these facts, he has induced labor in no instance. He would do so, however, if there was no marked improvement after the storm was passed, or if at any time there was a progressive increase in the trouble with the kidneys as indicated by the urinary findings. He has seen a number of cases weather the storm and go on in an improved condition to full term under the constant influence of veratrum, but with the beginning of labor the arterial tension increases and during the second stage such cases will almost certainly develop convulsions unless the drug is pushed to its full effect at this time. A pulse of forty per minute, vomiting and sighing respiration, while it appears alarming to the inexperienced, is no contraindication to the administration of chloroform. This is his method of handling all cases which have shown signs of kidney insufficiency. While many such cases have been placed in his hands by the family physician because of fears that eclampsia might occur, and the number of such cases greatly exceeds those previously considered, only one patient has developed convulsions and that at the single instant when the perineum was at the point of greatest distention.

4 WEST SEVENTH STREET.

ON THE SIGNIFICANCE OF ANATOMICAL-HISTOLOGICAL EXAMINATION METHODS IN OBSTETRICS AND GYNECOLOGY—WITH SPECIAL REFERENCE TO CURETTAGE AND EXPLORATORY EXCISIONS.*

BY

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In the course of a lecture to American medical men doing post-graduate work in Vienna in the spring of 1909, the late Prof. Von Rosthorn paid high tribute to the contributions of American gynecologists to the surgical aspects of the diseases of women.

*From the Laboratory of Klinik Von Rosthorn, II Univ. Franenklinik, Chief: Prof. Schottlaender.

At the same time he felt that it was perhaps fair to assert that, while Germany is indebted to America in the domain of gynecology, the debt has been acquitted in the field of obstetrics. Almost as important and in many ways determining the possibilities of surgical gynecology is the part that gynecological pathology has come to play not only in the diagnosis but also in the therapeutics of the diseases of women.

For practical purposes we have here an anatomical region that lends itself to exploratory procedures without the degree of surgical interference that most of the other viscera require because of their more inaccessible anatomical situation. The exploratory laparotomy for suspected cases of carcinoma ventriculi, for example, is obviously a greater interference than the curetment or the exploratory excision in a suspected cancer of the uterus. The therapeutic results of this latter dread affection have improved since surgeons have come to employ these minor gynecological operations for timely diagnostic purposes.

But while the most brilliant results have developed in this direction there is still a whole series of interesting and practical facts that the careful study of the material so derived and subjected to laboratory methods has yielded. It has been my pleasure and privilege to work at the Von Rosthorn Klinik of Vienna the past year under Prof. Schottlaender, the director of the laboratory. I have had an opportunity to see and study the large material of that Klinik, and at the invitation of Prof. Schottlaender, have studied especially the question of the microscopical interpretation of material gained through the curet and the exploratory excision of the uterus. I should like, however, to describe briefly the general scope of the work at the laboratory, the methods in vogue, and some of the most important observations regarding the pathology of the more gross material.

The gynecological laboratory as a distinct entity is the product of the most recent times and in a great many medical centers is still a new feature. In Vienna, at the Von Rosthorn Klinik, we have an example of one of the few well organized special gynecological laboratories. This special laboratory forms an important department of the Klinik and is conducted by a trained pathologist, who gives up all his time to the study of obstetrical and gynecological material.

For this special work he is assisted by an interne, several voluntary assistants and laboratory technicians. It would seem

at first sight, perhaps, that the number of workers in this apparently limited field of pathology is out of all proportion to the amount of work required. Two facts operative at the Klinik Von Rosthorn will serve, however, to explain this. The one very striking feature is that everything removed at operation, whether tissues spontaneously discharged from the uterus and vagina, or obtained in the course of the clinical examination, are all submitted to the pathological laboratory and there subjected to the most scrupulous handling. The laboratory treats all such material as of paramount importance and in this respect it necessarily differs from the general pathological laboratory. The second is that pathological material which presents features of peculiar scientific interest or of special importance to the patient, is subjected sooner or later to serial section and further elaborated.

It is obvious that such work can only serve to enrich the knowledge of the individual worker as well as give a more definite stamp to the work. Though there are limitations to even the microscopical aid, the results of the work at such a laboratory more than amply justify the time and the labor consumed.

CONCERNING THE LABORATORY METHODS.

Each specimen is accompanied by a blank with the salient data of the case, stating carefully the manner of removal and the clinical diagnosis and emphasizing frequently a doubtful diagnosis or the urgency of the examination. The specimen receives the personal attention of the chief pathologist from the moment of its submittance to the laboratory, to the sending of the report. The report is often in the nature of a diagnosis not suggested by the clinical examination or the operative finding.

The first step in the handling of the material is the macroscopical consideration. An anatomical description of each specimen is recorded, and for future reference those parts from which sections are taken are carefully noted. In the case of a complete extirpation of the uterus, with its adnexa, the number of examinations is increased. The removal of these organs presupposes, except perhaps in those cases where the exigencies of technic require it, that they are diseased, and in the laboratory this is determined with greater accuracy and precision. All the parts of the complex mass are therefore sectioned. Much care is exercised in the selection of the part to be cut. The whole mass is thoroughly scrutinized with a view of detecting suspected areas or possible seat of malignant change. Attention to details

eventually enables the examiner to select these portions with tolerable ease. Suspected parts are, moreover, always demonstrated to the clinician. The effect of this coordinate work between clinic and laboratory enables the gynecologist to excise suitable portions for microscopical study with a great deal of discretion. In cases of suspected malignant erosion, for instance, he will excise the area which will give the most probable evidence of the lesion suspected. The manner of the curettage will also be more thorough and painstaking; and the material removed will be saved *in toto* and sent over for examination. The examiner is thus saved the trouble of sending a negative report "because of insufficient or improper material."

As to the handling of the Material and Technic.—In general the methods are simple and uniform as possible. There is nothing special about the stains, the fixative agents, or the art of embedding. Alcohol is the first medium into which small masses are directly placed for the process of hardening.* For larger masses, however, formalin is indispensable. In some cases formalin is also injected into the substance of the tumor, or whatever it may chance to be, to accelerate the hardening. Kaiserling is employed as a medium to conserve the parts in natural color. All the museum specimens are treated in this way. Of the stains, hematoxylin-eosin is most used. It has been found to give the best pictures and is employed uniformly for the purposes of frequent comparisons. Besides the special stains for t. b. c. and spirochete, the pyronin and the Van Gieson are the more commonly employed differential stains.

Paraffin is used by preference and exclusively in routine work. It permits of finer sectioning, and enables one to preserve the blocks in a very convenient way. At least two sections of each specimen are stained at once, one or two of the same are kept unstained in case a differential stain should be desired. This minor precaution, besides promoting economy of material, saves much trouble when it becomes necessary to remount the block. Large material is treated for a much longer period of time in formalin or kaiserling before parts are cut out of it. The object of this precaution is to make sectioning easier, to give smoother surface to the parts prepared for the block and the microtome, and, moreover, to prevent distortion

* Whenever special study is to be made, of the plasma cell, for example, the material is always put into alcohol. Formalin is very much less favorable, and in the general treatment of such tissue masses as a small polyp, an amputated portion of the cervix, is superfluous.

of the remaining mass. Particular attention is paid to the manner of cutting sections from the gross material. The advantages of this are reaped when it becomes necessary to further work up the material. Recently the large type microtome, the "tetrandr," has been employed. This enables us to cut large sections, as the entire length of the uterus. It is not only a time and labor saving machine, but makes possible the preservation of the natural relations of the specimen.

All these steps in the technic are carefully entered in the record book of the laboratory. The macroscopical and microscopical descriptions of the material examined, the diagnosis—especially stated—the disposition of the gross material, of the blocks and the slides, are also noted in the same book. In as much as the Klinik is connected with the University, the material is orderly disposed in the Museum, the type lesions and the rarer lesions being grouped according to anatomical and pathological classifications. *The object of the gross, and more especially the microscopical study of this material, is to give definite conceptions of the structural changes in the female generative organs.* The advantages to students, who can thus see and handle what otherwise they must learn imperfectly through pictures and word descriptions, are easily appreciated.

I.

As to the Actual Histological and Anatomical Working Methods.—Careful examination of a large amount of material has taught us the characteristic histological structure of the various genital parts; and where a number of these are involved in a simultaneous process of disease, to recognize them by their salient features and to separate them when apparent similarity in structure exists. Without entering into all the details of the differential histological diagnosis of the various organs I think it may prove of some practical interest to note what in general is the working method at the laboratory of this Klinik: The smallest particles of tissue by virtue of a peculiar unmistakable stroma will suffice to identify—apart from the presence of follicles—its ovarian origin. As a result of a certain amount of experience one gets to be able to distinguish in tubo-ovarian masses, for example, tubal from germinal epithelium. The ligament is readily made out in the presence of fat and musculature and especially when nerves and ganglia are also to be seen. From the uterine musculature the encapsulated myoma distinguishes itself because of the pecu-

liar pallor of its cells, its poverty in chromatin content, and arrangement of the muscle fibers. In the uterus, moreover, one can separate the various parts, portio, cervix, isthmus, and corpus, each portion showing its individual character of lining epithelium; the portio vaginalis from the vagina, in the absence of erosion glands, because of its lack of musculature. The frank edema of the musculature combined with the thrombosed vessels permits us even, in the absence of the more positive evidence that the decidua would give, to distinguish the puerperal from the nonpuerperal uterus. Decidua cells may be recognized even in a degree of advanced degeneration because of their peculiar staining qualities and morphological character. The labium majus differs from the labium minus by its content of sweat glands and hair. The peculiar tendency of the epithelium of the clitoris to cornification and its peculiar cavernous structure help us to recognize this organ. The urethra may be recognized because of the peculiar arrangement of its epithelial lining. The excretory duct of the Bartholinian gland is also lined by squamous epithelium, but the glandular structures surrounding it would serve to distinguish it very readily from the urethra. In a case of total extirpation of the uterus and its adnexa where a number of these parts are perhaps intimately connected it becomes possible in this way to unravel the complex mass.

Special attention was, moreover, paid to anatomical details.

The Uterus.—Measurements are taken principally of the length and breadth between the insertion of both tubes. The width of the cervix is also noted—the consistency and the general condition as well. Frequently variations were seen in the thickness as well as the origin of the sound ligaments. A bifurcated origin of one or both was not infrequently seen. This is an anomaly which could be referred back in most cases to disturbances in development and is especially encountered in malformations. The peritoneal covering of the uterus proved of help in the absence of other criteria, by the difference in its anterior and posterior length, to determine the correct anatomical orientation of the organ. The portio vaginalis was always closely scrutinized for the presence of erosions and ulcerations; moreover, in cases where the external os was widely open, whether epidermization of the cervical canal had taken place. This experience was met with especially in prolapsus uteri and occasionally also pointed to a possible beginning carcinoma. The external guide to the

isthmus uteri, according to the researches of the laboratory, has not been proven to be the most constricted portion of the uterus. A more practical and perhaps truer index of the position of the internal os is the level indicated by a line drawn through the insertion of the uterine arteries.

On sagittal section the presence of cystic glands would point to the probable seat of the isthmus, as the glands in this region are particularly prone to undergo cystic change. Polyps and "varicose synechiæ" are other things that engage the attention. The microscopical examination of the polyp proves with more positiveness its origin from one of the special portions of the uterine mucosa. The presence of cervical and corpus glands in the polyp usually indicates isthmic origin. In the parenchyma of the uterus evidences of arteriosclerosis are to be sought for. The hyaline condition of the blood-vessels, which may be seen with the unaided eye, already suggest a muscular degeneration. This together with a hypertrophic or hyperplastic condition of the uterus make up the picture of the so-called myometritis. The smallest myomata, because of their sharp circumscribed outline, are easy of detection. *In all myomatous uteri the cavity is closely examined.* Only recently a uterus removed by the vaginal route for myoma proved on sagittal section to harbor a well advanced ulcerating carcinoma. This has been seen several times. It would not be so difficult in these cases to say which caused the late and more aggravated symptoms. *In all carcinoma cases* the uterus is examined macroscopically for more remote associated carcinomatous involvement; in carcinoma of the cervix, the extent of the invasion of the body. Whether the limits of the growth are sharp or ill-defined may be ascertained with the unaided eye. Portio and cervix carcinoma, as a rule, do not admit of sharp differentiation. On the other hand the solid type of cervix carcinoma may be readily distinguished from carcinoma of the body of the uterus. The adenocarcinoma does not always permit of the same easy differentiation.

The microscopical examination, however, is of far more importance than the gross consideration. The nature of the growth, whether it is solid or glandular, its relation to the mucosa, the tendency of the growth in the depth or along the surface may be determined by the histological examination. The extension of carcinoma along the surface has been seen in a certain percentage of the cases. The degree of malignancy of the growth has been found to bear no definite relationship to its origin,

nor does the rapidity of the metastasis depend upon the original seat of the carcinoma. (Schottlaender.) Thus the carcinoma of the cervix or of the portio vaginalis metastasize with the same readiness. Carcinoma of the corpus is a notable exception. The cervix carcinoma being more frequent than the corpus carcinoma, the metastasis would also in the former instance be correspondingly increased. True cauliflower growth of carcinoma has been seen in the smallest number of cases. It is, in fact, a comparative rarity. A true papillary form of carcinoma is also very rare and when encountered should suggest that it is secondary to some other organ. Most often the ovaries are the primary seat of the tumor while a small percentage of papillary carcinoma originate from the cervix. *Sarcoma* was met with, in the great majority of cases, as a secondary malignant change in a myoma. This is not at all infrequent. Still, often those parts which would excite the suspicion of the beginner and lead him to suspect sarcoma, may in reality be only one form or other of benign degeneration of a myoma. A fibromyoma rich in cellular elements has given rise to greater difficulty in diagnosis. Softening cysts developing in myoma were frequently seen, but cysts of true glandular character the majority of which could be referred back to an underlying adenomyometritis were also seen. Only exceptionally the Gärtner duct entered into consideration as an etiological factor of this peculiar condition. In some cases the cysts were of peritoneal development. In several instances the large size of the cyst of the uterus gave rise, because this form of cyst may be easily mistaken for an ovarian cyst, to mistakes in clinical diagnosis.

The Gravid and Puerperal Uterus. The products of gestation may also be considered. We will not, however, touch upon the fetus because the consideration of this would carry us too far. The gravid uterus was obtained partly from autopsy material and partly through total extirpation for carcinoma, chorioepithelioma, and myoma. The uterus is cut if possible in the median line with the fetus left intact and retained. This process is somewhat tedious at times but is necessary to maintain natural relations. The object of this procedure is, of course, to get desirable material for study as well as demonstration purposes. The condition of the capsularis and the basalis (chorion-frondosum) are thus noted in early stages of gestation. In later stages the relationship between cervical canal and the lower uterine segment is noted with reference to decidua formation; furthermore,

the extent of the physiological invasion of the normal chorion epithelium in the parenchyma can thus be ascertained. (One beautiful case of chorioepithelioma because of the deep invasion of the parenchyma with a marked degree of necrosis and inflammation gave a negative result on curettage at an early date.) The so-called destructive hydatid-mole "Destructirende Blasenmole" was a term reserved for that form of chorioepithelioma in which the simple hydatid mole, from which evidently it had developed, was still to be seen. The hydatid mole as a necessary forerunner of all chorioepithelioma could not be substantiated by the experience of the laboratory. The uniform widespread invasion of chorionic villi (as claimed by Veit) has not as yet been demonstrated.

The puerperal uteri were obtained by removal for myoma, osteomalacia, occasionally because of rupture. Here the presence of thrombi, the placental site, the separation of the decidua were considered. Microscopically, the presence of serotinal giant cells and rests of chorionic villi were noted. The last were seen only in a few cases of adherent placenta and in one case of placenta previa. Changes in the musculature, particularly edema and evidences of inflammation, were other points for consideration. The metroendometritis, the thrombometrophlebitis and metrolymphangitis were carefully studied. Spontaneously discharged ova in abundant numbers of various size and age occasionally still showing the situs came to examination. The products of gestation in the early stages of pregnancy were, as a rule, in a macerated condition. Fetal rests and occasionally an umbilical vesicle were still to be demonstrated; more often blood and the fleshy mole. A Breussmole I have not seen as occurring in the routine work.

The Placenta.—As a rule the weight, size, and thickness, and estimate of the blood content are noted; infarct and cyst formation as well. Only once a true amnion cyst was seen; more often the cysts were of the subchorial trophoblast variety. *Microscopically* the age of the placenta is determined by the appearance of its constituent parts. This will be described later. Here be it mentioned that the trabeculae of trophoblast are, according to Prof. Schottlaender, often incorrectly mistaken for decidua. Thrombi, infarcts and hemorrhages may be seen in the microscopic picture. Occasionally a beginning hydatid mole will be seen. This should not be mistaken for the very young, normal, chorionic villi which show a soft "edematous" and vacuolated

stroma. The condition of the epithelium showing the *circumscribed proliferation* in the hydatid mole serves to distinguish these two conditions. Lues is suspected when the placenta is unusually anemic, when the microscopic examination of the membranes shows a marked degree of infiltration and when the blood-vessels are also inflamed or show obliteration. The spirochete can be demonstrated in some cases by the Levadite stain or the "Tusch Verfahren." Tuberculosis has not been observed in the placenta. Several times chorioangioma was seen. In one case we saw an early stage in the formation of the angioma, in which several villi somewhat larger than normal already showed the formation of new blood-vessels. But the larger masses which consisted of an enormous plexus of fine blood-vessel surrounded by syncytial epithelium made up the characteristic picture of this placental tumor.

The Fetal Membranes.—The amnion not infrequently presents more than one layer of cells. Cylindrical cells were also observed. This would perhaps indicate that the amnion is capable of secretion. The chorion leve shows trophoblast or Langhans' cells after it has lost its syncytial layer, in contrast to the chorion frondosum, which loses its trophoblast layer first (the chorion leve trophoblast is often overlooked). Sometimes deposits of degenerated decidua on the amnion are seen.

The Umbilical Cord.—One notes the length, torsion, if this exist, or false or true knots and spurious cyst formation. True cysts have not been observed. The condition of the vessels microscopically, and the presence of allantois rests or ductus omphaloentericus is also noted. The former was seen in a great number of umbilical cords and at a late stage of pregnancy; the latter less frequently.

The ovary is inspected in the first place as to its connection with the uterus. Thus the ligamentum ovarium proprium was often found absent, the ovary in such case being in direct contact with the uterus. Its relation to the tube was next noted; whether by adhesions or, as in the case of tubo-ovarian cyst or abscess, a more intimate relationship were present. Measurements were also taken as in the uterus. Abnormally large, thin ovaries were seen associated with myomata. The form variation in the ovary is an interesting thing to observe. The fetal spindle-shaped ovary has been seen quite frequently retained in the adult. The surface form also varies considerably; occasionally it is smooth, sometimes furrowed and indented, at times it shows

the fetal form, while in some instances not quite so rarely as was formerly thought, the ovary gyratum is seen. The presence of a corpus luteum should be noted. Ovarian rests and isolated ovarian parts as in the ligamentum latum may still be recognized as above described and should not be mistaken for sarcoma.

The term "chronic oophoritis" was applied to those cases in which the after-growth of Graafian follicles from primordial follicles could not be demonstrated. The latter follicles were either totally absent or markedly decreased in number. In those ovaries where a sufficient number of primordial follicles were present but where a high grade hyaline degeneration of the vessels obtained, with possibly an abnormal degree of corpora albicantia, of cystic follicles, of lymphangiectasis or hemangiectasis and edema, we were obliged to make the diagnosis of nutritional or circulatory disturbances of the ovary. A marked infiltration of wandering cells indicates a more or less advanced degree of acute inflammation—in the highest grade—abscess formation. As a rule the corpus luteum was the seat of the suppuration. Tubercular involvement also showed a special predilection for the corpora lutea (Schottlaender). In those rare cases of idiopathic tuberculosis of the ovary in which the process is not an extension from the peritoneum, the tubercles have a very peculiar form and would make the diagnosis from a corpus luteum tuberculosis very difficult. The only case of actinomycosis I have seen came to the laboratory from another source than its own clinic.

In the large domain of cysts of the ovary we succeeded often, but not always, in the precise differentiation of simple follicle from lutein cysts. From the investigations of the laboratory it would seem that a certain proportion of the lutein cysts result from maximally dilated follicle cysts from whose theca the lutein cells develop. The true lutein cysts, however, show the type cell that was probably for the most part derived from the follicle epithelium. The corpus luteum cyst can be recognized macroscopically by the plicæ formation and the yellowish pigmentation on its inner wall. Several times we have also seen lymph cysts. Also some of the so-called "Markstrange" may have taken their origin from lymph spaces whose endothelial cells have proliferated. In the majority of cases, however, they arise, according to the researches of this laboratory, from the germinal epithelium of the ovary.

Among the larger, truly proliferating tumors the glandular

and papillary cystadenomata mostly engaged our attention. Between these two varieties there were many transitional forms. Not uncommonly there was a combination of both; occasionally we met with an incipient stage of the carcinomatous change. One point especially to be emphasized in this connection is that the diagnosis of carcinoma in these tumors was made *only* when distinct atypical proliferation of the epithelium was found and this in contradistinction to the view entertained by the general pathologist, who is more inclined, because this group of tumors shows the tendency to metastasize, to include papillary cystadenomata among the carcinoma group. Once we saw this truly malignant form of cystadenomata metastasize in the rectum. The occurrence of carcinoma in the ovary was, moreover, found to be associated with those two types of tumors; more commonly the papillary form showed the malignant change; but it was not always very easy to distinguish this picture from that which the more infrequent carcinoma developing from the glandular cystadenoma gives. Much less frequently I have seen primary carcinoma of the ovary. This is conspicuously of the glandular type but occasionally it may show the solid form, and in some cases the true squamous-cell carcinoma. But in many cases the "primary" carcinoma of the ovary is in reality a metastasis from an unrecognized remote original focus in the alimentary tract; the primary seat being the stomach, as a rule, more uncommonly the intestine.

During the latter part of my stay at the laboratory there were several cases of bilateral metastatic carcinoma of the ovary, in one of which the very interesting phenomenon of a sarcomatous reaction of the ovarian stroma, supposedly following the carcinoma invasion, was seen—a process which could not be demonstrated in other parts, as the rectum, for example, which also shared in the metastatic process. In this case, too, only a small number of typical *seal-ring cells* were seen contrary to their more pronounced occurrence in the true Krukenberg tumor. The diagnosis of the *carcinoma ovarii sarcomatoides mucocellulare* was therefore in this case not justified. Whether the Krukenberg tumor always shows the combination of carcinoma and sarcoma has not yet been definitely established. It has seemed possible to us that, particularly in those cases where there is metastatic sarcoma in other organs—in one of our cases the skin was the seat of metastatic nodules—that we are possibly dealing with, in part, a

sarcomatous and partly with an endotheliomatous primary new-growth of the ovary.

Among the numerous dermoids partly only of biphyllitic, in other cases triphyllitic in nature, one case was met with in which the tumor developed from an accessory ovary. Another case of particular interest was one in which there was seen in the parietal peritoneum a true glia transplantation from the dermoid. Besides these I have seen two cases in which the essential component was struma substance.

Fibroma of the ovary was not infrequently met with. Occasionally the caoutchouc-like consistency of the tumor, on section, indicated the positive nonmalignant nature of the growth. Occasionally, however, edema and softening cysts were disagreeably misleading from a diagnostic point of view. Microscopically the differentiation of the connective tissue from the intermingled muscle bundles is often very difficult, as even the van Gieson stain does not make the sharp distinction possible. Still more difficult than this, however, is the diagnosis of a beginning change into a spindle or small round cell-sarcoma, or into an endothelioma. The change at such early stage one does not get to see very often. I have seen this in older specimens, as during my time no such phenomenon was met with. The diagnosis of mixed-cell sarcoma is much more readily made in marked contrast to the extraordinary difficulty encountered in the other forms of sarcoma. Finally, I may mention one case of bilateral hypernephroma of the ovaries demonstrated by Prof. Von Rosthorn at Strassburg but not yet published in detail. The macroscopical inspection of the specimens already pointed to the unusual nature of the tumors. The small cystic nature of the tumor, the peculiar blue coloration of the cysts and of the more contrasting yellowish masses between them suggested the possibility of a hypernephromatous origin. In the smaller of the two tumors retention of the ovarian stroma was still to be demonstrated at the periphery.

The Tubes.—Attention is paid first to their length, the manner of their course, their surface appearance, adhesions, and consistency; then in more detail the various anatomical parts. Abnormally long tubes having a straight course though still retaining their normal thickness were repeatedly seen; on the other hand, tubes showing marked tortuosity, at times suggesting or conserving the fetal type, were also encountered. The peritoneal surface of the tubes is found not infrequently covered with

small cysts which the untrained eye regards as tubercles, whereas in reality these mistaken tubercles consist of peritoneal cysts with endothelial proliferation. Primary tuberculosis of this organ, considering the large amount of clinical material that passes through this clinic, has been seldom seen. More frequently the condition known as salpingitis nodosum-intramuralis and -isthmica could be recognized macroscopically. Several times this condition was seen in cases of ectopic pregnancy and could be regarded as an important etiological factor. More often, however, without the nodular thickenings we saw macroscopically the invasion of the proliferating tubal epithelium into the musculature and even into the serosa which gave rise to a condition or perhaps to an anomaly designated as adenomyosalpingitis. These epithelial proliferations are often difficult to distinguish from endothelial proliferations, which is the case almost invariably in tubal pregnancy. In the ampullary and only on the anterior wall of the same, the possible presence of accessory tubes is sought for, as this is the favorite place for their occurrence. They appear pedunculated, are partly cystic and partly covered with fringes at their outer end. A cavity in such accessory tubes has not been demonstrated and yet the character of the fimbriated end showed such a similarity with the normal fimbriæ that one could not help thinking of an attempt at malformation. A true double formation of the tube has not been seen.

Hydro-, pyo-, and hemato-salpinx were naturally the more common findings in diseased tubes, the difference between the catarrhal and the suppurating cystic forms was seen in the most striking manner. In the latter form the bacteria met with most often were the gonococci, seldom the other pyogenic bacteria, occasionally bacterium coli. These, however, were almost exclusively to be demonstrated in the smear, and not in the section. Very frequently in the purulent forms "Mehrschichtung" or a many layered epithelium was seen, in some cases actual squamous epithelium formation was observed. Hematosalpinx was, as a rule, occasioned by ectopic gestation. Not only were villi demonstrated but also the "Einidation." Occasionally the fetal membrane and, in a smaller number of cases these, fetus itself were present. Capsular rupture or "tubal abortion" was the case in the great majority of these extrauterine pregnancies. One case was of particular interest, as the proximal end of the tube containing the greater part of the product of gesta-

tion was displaced, and becoming bound up with the posterior aspect of the uterus and intimately adherent to the cystic ovary, at first suggested very strongly the possibility of an ovarian pregnancy. Further investigation showed the true relation of the pregnancy to the tube. One remarkable case of a curious pelvic tumor proved to be a hematocele. Prof. Schottlaender demonstrated chorionic villi in the coagula.

Newgrowths of the tubes are relatively infrequent. Several cases of carcinoma, not only metastatic from the uterus or the ovaries, but also primary in nature, were met with. One case which showed macroscopically a small tumor, suggesting a cyst, or possibly a myoma, proved on microscopical examination to be a rarer form of lymphangioma with endothelial proliferation. In the mesosalpinx, between tube and ovary, parovarian rests were seen in a fair proportion of the cases and may be detected with the naked eye when the specimen is held up toward the light.

The ligamentum latum presented for chief consideration the question of septic thrombi and carcinomatous involvement. In a few early cases of the disease we could demonstrate metastasis in the Championniere gland alone. Occasionally this gland was found free, however, while those higher up were already carcinomatous. The cysts found in the broad ligament are more commonly of ovarian or parovarian origin but may also be due to cystic dilatation of the lymph spaces (true lymph cysts), or may arise from the serosa of the ligament. Parovarian cysts always unilocular and lined with a single layer of cubical or low cylindrical, often ciliated epithelium are interesting from a diagnostic point of view. They are found to differ from the other intraligamentary cysts of ovarian origin by their intimate connection with the tube.

Tubo-ovarian masses because of the frequency of inflammatory conditions of the adnexa were often seen; but the number of true tubo-ovarian cysts or abscesses were comparatively uncommon. On section of the gross specimen one can sometimes see the point where tube merges into ovary. But, as a rule, the histological examination alone can be relied upon to show the transition or connection of tubo-ovarian tissue in the cyst wall. Even with the microscopic aid one meets with difficulties as these structures may have lost every trace of their characteristic appearance. As a rule, the hydrosalpinx or pyosalpinx enters into combination with a corpus luteum or follicle cyst to form the retort-like tubo-ovarian tumor.

The Vagina.—The studies of the pathological lesions of this organ were from material gained in plastic operations and also in cases of total radical extirpation of the uterus for carcinoma. The lesions seen were a hypertrophic or atrophic condition of the various layers, particularly differences in the epithelium. Colpitis granularis was a common occurrence. Occasionally ulcer formation and cysts were also encountered. The cysts presented an epithelial covering which was of the squamous-cell, cylindrical, or cuboidal variety. Of the solid tumors fibromata and papillomata (condylomata acuminata) and myoma were not infrequently seen; sarcoma much more rarely, while carcinoma was seen as a secondary extension from the portio carcinoma in quite a number of cases. Primary carcinoma of the vagina is an exceedingly rare occurrence.

The bladder was studied only when removed for a carcinomatous growth which, as a rule, infiltrated the parametrium or the uterus itself, and *vice versa*. The rectum seldom came into consideration in the same way.

Of the lesions seen in the external genitalia, the most interesting were kraurosis, elephantiasis, cysts and abscess formation of the Bartholinian gland, ulcerations and paraurethral abscesses with well developed capsule. Carcinoma of the clitoris and labia majora, as a rule of primary nature, were also occasionally encountered. Kraurosis was interesting as forming the possible basis of a carcinomatous growth. In our cases of elephantiasis we found microscopically the universal lymphangiectasis and marked endothelial cell proliferation, and, besides giant cells, the presence of an increased amount of subepithelial lymphoid tissue and round-cell infiltration. The condition described as "colpohyperplasia cystica" in which there is an unusual degree of lymph stasis as well as lymphangitis, was very rarely encountered.

II.

Thus far I have described the treatment of the more gross material dealt with in gynecological pathology and we have seen that the anatomical consideration plays an important part in helping to interpret some of the more curious lesions. The methods employed are of course applicable to a gynecological laboratory associated with a hospital service. We come now to the matter of curetment—small tissue particles spontaneously discharged and others excised for therapeutic or diagnostic

purposes. Here the question of anatomy is obviously not of so much help. Indeed little can be determined with precision by the unaided eye, particularly in the case of curetted material. The microscope becomes the only reliable index of the pathological change. It is purely a matter of histology. This is a department of gynecological pathology which is of the utmost importance to the gynecologist because he meets with these problems almost daily.

Technic.—The curetted material is always placed *in toto* in a dish of water and washed. All the particles are then transferred into absolute alcohol in which they remain for two hours with several changes; then in acetone for fifteen minutes; xylol one-half hour; soft paraffin melting point 52° for about three-fourths hour; hard paraffin melting point 56° for about three-fourths of an hour, then are blocked. Within a few hours the specimen is ready for sectioning. For ordinary purposes the eosin-hematoxylin and the pyronin-methyl green stains are sufficient and satisfactory. The latter stain is used for the demonstration of plasma cells.*

The somewhat larger material obtained by excision of a portion of the cervix or perhaps an amputated cervix itself would naturally require a longer time to harden.

Histological Considerations.—The study of the curetment is practically the study of the endometrium. Something may be gleaned from the amount of material removed. The question of the individual operator must, of course, be taken into account. In some instances, without the presence of a soft endometrium, which occurs in postabortive or postpartum conditions, the section showed a not insignificant amount of musculature; this indicates a very vigorous scraping.

At other times there was scarcely a gland to be seen. Sometimes nothing but a modified stroma or granulation tissue was brought down by the curet. These evidences point to a probably ineffective curettage, but they may also indicate a pathological condition of the endometrium.

*The paraffin section is placed into xylol for a few minutes, then into absolute alcohol for about three minutes, water also about three minutes, then pyronin methyl-green fluid about four minutes, then momentary rinsing in water. This step should not take more than a second; then equally short immersion into alcohol. Xylol for about two minutes, and cover-glass. The nuclei of the plasma cells take the green stain, the cytoplasm red. The large pale red body of the decidua cells containing the small slightly green tinged nucleus stands out in pretty contrast to the rest of the cellular elements.

The most important rule to be observed in the examination of the stained section is that strict inspection be made of every particle of tissue on the slide, no matter how small or nonchalant it may seem. Just these very smallest particles may contain one or two chorionic villi or a mass of decidua, or as we shall see later, any other of the positive signs of pregnancy. While the microscopical examination has its powerful limitations in any event, nevertheless, when the microscopic picture does not show pathological changes of the endometrium or possibly also of the muscularis of the uterus, we must seek for an explanation of the menstrual disturbance in question in other organs. The ovaries, tubes, or even the nervous system and remote organs of internal secretion may then be at fault.

Careful studies of the endometrium in more recent times have succeeded in clearing up a variety of conditions which were formerly indiscriminately confounded with each other, and have, moreover, helped us to recognize that the *status antemenstrualis* is a distinct condition giving a definite histological picture. (Hirschmann, Adler, and others abroad, Norris, Alexander, and Novak in this country.) Previously this was regarded as an endometritis glandularis, occasionally hyperplastic or hypertrophic, and sometimes the combination of the two was noted. We now know that just before the onset of menstruation certain changes occur in the uterine mucosa which foreshadow those seen during the menstrual period. Briefly, the endometrium at such a stage shows: an actively secreting appearance of the glands which are more or less papillary in form, not at all unlike the "gestation glands"; a more or less hemorrhagic, edematous condition of the stroma with here and there evidences in varying degrees of decidual reaction.

This picture is so definite that with a little experience one can soon get to recognize it. There may or may not be a certain amount of infiltration. This is not essential for the picture. The *postmenstrual* condition of the endometrium does not give a specially distinct picture, but the glands are in a condition of collapse, are nonsecreting, have lost their papillary form, and instead of decidual reaction the stroma is apt to show the more or less constant presence of a mild degree of infiltration. *Of 383 curetments examined we have been able to demonstrate status antemenstrualis in twenty-four cases.* The status antemenstrualis can be recognized without the aid of clinical data.

Sometimes one encounters a pronounced degree of hyper-

trophy or hyperplasia of the glands, or both together with slight changes in the stroma. More commonly, however, this curious condition is associated with an endometritis interstitialis. The conception of such a state of the glands rests entirely with the experience of the examiner. One acquires one's own standards of judging whether the glands are hypertrophied or increased in number. The interpretation of the condition is by no means clear. The truth is that we do not know the significance of such a condition of the glands, nor the factors that bring them about. For the present we must be content with simply stating the condition as such: When occurring with an interstitial inflammation of the endometrium we have been in the habit of reporting endometritis interstitialis; hyperplasia and hypertrophia glandularis.

In thirty-three cases of the above series we have found only hyperplasia and hypertrophy of the glands with some edema and slight hemorrhage in the stroma. Clinically the diagnosis of endometritis interstitialis, endometritis postabortum, or endometritis hemorrhagica was made.

Endometritis Interstitialis.—The final criteria for an inflammatory state have until very recently been somewhat in debate. The question seemed to hang upon the significance and presence of the plasma cell.

Although in the great majority of cases we have been able to demonstrate the presence of the plasma cell in more or less abundance, there still exists an unmistakable proportion of cases in which the endometrium shows a marked degree of infiltration of round cells and leukocytes, and a certain coarseness of the stroma. In these cases, in spite of the absence of the plasma cell, we have designated this condition as endometritis interstitialis. We cannot, in view of these findings, make the plasma cell the invariable indicator of an interstitial inflammation. In this connection it is interesting to note that in the senile endometrium, apart from the changes in the glandular elements, the stroma is very densely infiltrated with small lymphocytes which give it a very "coarse" appearance.

The same change may be frequently observed following an abortion or partus. The coarse fibrous stroma may in some cases be regarded as a terminal stage in a chronic endometritis.

Endometritis Exfoliativa.—Formerly called dysmenorrhea membranacea, was seen several times. In one case, that of an elderly virgin from whom a myomatous uterus was removed because of metrorrhagia and dysmenorrhea, the examination of

the extirpated uterus revealed an advanced degree of this form of endometritis. The features presented on microscopical examination were:

1. A marked infiltration of the stroma with here and there decidual cells.
2. Marked decrease in the number and the size of the glands.
3. A striking smallness of the lining epithelium, and
4. The presence in a preponderating degree of the eosinophile leukocytes in the stroma.

This condition will readily be distinguished from a simple interstitial endometritis. Occasionally one would also be apt to mistake it for a status antemenstrualis. In the condition known as dysmenorrhea menstrualis we have an aggravated picture, so to speak, of the status antemenstrualis. Besides a decidual reaction of the stroma there are also evidences of inflammation.

Endometritis Postabortum.—The question of the abortion becomes here the one of vital importance, and here too the greatest possibility for error in diagnosis takes place. Clinically the diagnosis may have been made while the microscope can show not the slightest evidence of pregnancy. In some cases there are uncertain evidences or as we have come to regard them as *probable signs of a precedent pregnancy*. In the great majority of cases of our series we have been able to confirm the clinical diagnosis. The demonstration of the positive signs of pregnancy is, however, of much importance in those cases in which the clinical data cannot be depended upon. The patient may not be aware of the true nature of the condition, or on the other hand will not for reasons of her own, admit that she was pregnant. In six cases we were able to demonstrate pregnancy where this was not suspected. One case was exceptionally interesting: An unmarried patient presented herself at the clinic with the history of metrorrhagia and severe pain. She persistently denied intercourse. A tumor was found situated in the cervix and bulging into the vaginal fornix. The tentative diagnosis was made of "genital tuberculosis" or "chorioepithelioma" in a virgin. Histological examination of the curetted material, however, revealed a high grade inflammation of decidua, without the slightest evidence of malignant change. Further examination showed that the patient had "malignant intentions" as a perforation through the cervix, which the patient had caused by the use of a hat-pin, was discovered. The products of gestation had been infected in this way.

The positive signs of pregnancy as seen under the microscope are villi, fetal membrane or perhaps fetal rests, and decidua. The villi may be small in number or they may be in a process of degeneration; when present, they are unmistakable. Occasionally the beginner is apt to be misled by an isolated, regularly formed mucous gland. Examination with the high power, however, cannot fail to disclose the double layer of epithelium or the syncytial character when only one layer is present. The decidua of pregnancy is quite characteristic, the cells are much larger than those seen in the decidual reaction of menstruation, are distinctly polygonal or fusiform, and occur in groups. Occasionally they are to be observed on the hyaline margin of the vessels. Sometimes one or two of these cells may be the only ones seen, and they are apt to show, when in a process of degeneration, the most intense eosin stain. In a few cases we saw one or two serotinal giant cells embedded in a mass of hyaline tissue. The picture presented is very distinctive and absolutely diagnostic. Occasionally lime is also to be seen in these cells.

Of the uncertain signs we may mention: (1) The gestation-glands (Schwangerschafts-Drüsen; (2) a decidual reaction; (3) a marked degree of infiltration; and (4) the occurrence of "cell-bands." The first two, as we have seen, may be met also in a status antemenstrualis. The last are more important as they indicate a regeneration of the stroma. The cells show the type of younger connective-tissue cells which lie end to end and have the tendency to group themselves in parallel bands. We have seen this quite a number of times and from it were able to say without the clinical data at hand, that the patient was pregnant at a recent date.

On the other hand, in thirty-eight of our cases in which the diagnosis of endometritis postabortum was made we could not demonstrate pregnancy at all. The histological pictures seen instead, were those of endometritis interstitialis or glandular hypertrophy and hyperplasia with possibly a hemorrhagic edematous condition of the stroma.

Besides the various signs of pregnancy, we have learned from the study of placenta of various ages, to determine in cases of incomplete abortion, with a fair amount of accuracy, the particular point at which the interruption in gestation took place. The presence of a double layer of epithelium in the villi, namely the syncytial and the trophoblast at once, suggests pregnancy before the fifth month. When the combination is seen to vary

so that one villus will show less trophoblast (Langhans' cells) while another perhaps only syncytium, pregnancy must have progressed beyond the fifth month. This variation in the character of the chorionic epithelium may be seen in placenta of from five to six months old. After this period the syncytial layer of epithelium is seen to be in the preponderance. When the syncytial "buds" are still to be seen, apparently loose between the chorionic villi, pregnancy may be assumed to have gone on to the third and fourth month. Finally the presence of nucleated red blood cells indicate a very early stage of pregnancy—before the completion of the second month.

It will be seen then that we have fairly reliable means of controlling, in the absence of the fetus, the statement of the patient as to the passing of a pregnant state, and also the approximate age of the fetus. These evidences may be of service, as suggested by Prof. Schottlaender, in certain cases of law.

Several times we were able to detect a beginning stage of the hydatid mole, as above described. The chorioepithelioma has also been mentioned.

Of the endometritis caused by specific microorganisms, the gonorrheal and tubercular form distinct pictures. The former is characterized chiefly by an overwhelming number of plasma cells in the stroma. The tubercular form is characterized by the presence of giant cells of the Langhans type, the epithelioid or tubercle cells, and the small round-cell infiltration. The cheesy or granular masses plus the "baked" condition of the thickened, often metaplastic epithelium, belong to the picture. The histological changes are far more important, however, than the finding of the tubercle bacillus. In the other acute and chronic types of endometritis of simple or purulent nature only the bacteria are distinctive because the microscopic appearance is practically the same no matter what the excitant may be.

Of the tumors met with in curetted material, occasionally a myoma or polyp will be discovered, especially when the uterus, as following an abortion, is apt to be soft. The myoma is naturally apt to be of the submucous variety which has undergone softening. Occasionally, too, the intrinsic musculature brought down by the vigorous curetment will have to be taken into account in the differential diagnosis. In one case we came upon an unsuspected case of sarcoma. The case was one of a married woman, thirty-three years of age, who had had more profuse menses, of longer duration as well, for the past six months and

came into the hospital while bleeding and also complaining of pain. We found on examination of the curetted material a very striking appearance of the stroma of the mucosa. In some parts this was entirely replaced by collections of densely "packed," for the most part, round cells here and there showing variation in size a number of which also presented a striking number of mitoses. Besides this there were small islands rich in cells and some isolated giant cells containing many nuclei. The glands were diminished to a marked degree. It was evident that we were dealing here with a beginning formation of a malignant growth of the stroma—a sarcoma. In this connection I may mention that the phenomenon of "optic unrest," also observed in this case, is probably one of the most important indications of a sarcoma. This is of especial significance when found in the parenchyma of the uterus. In the mucosa the question, of course, may arise as to whether we might not be dealing with a high-grade infiltration of leucocytes. This may be considered in suspected cases of small, round-cell sarcoma, but the very striking degree of the denseness of the cells in the latter case as against the more or less scattered appearance that characterize all lymphatic infiltration, would favor the diagnosis of sarcoma. The mixed cell sarcoma offers practically no difficulties.

Carcinoma was met with several times, also chorioepithelioma, in curettage practised for bleeding which was not, however, believed to be due to malignant growth. Several times an adenoma-malignum was encountered. The characteristics of this form of growth were: (1) The enormous hypertrophy and hyperplasia of the glands which are very close to one another; (2) the stroma is practically absent so that the glands have been described as lying "dos-a-dos." Besides they show a tendency to invade the parenchyma of the uterus. The epithelium, however, consists of one layer of cells, some of which may show atypical mitosis. The adenoma malignum thus stands between the benign glandular hypertrophy and hyperplasia, and the more malignant adenocarcinoma, into which it has often been seen to develop.

Of material spontaneously discharged from the uterus, besides tumor particles, the most common things are retained or degenerated decidua; sometimes granulation tissue (which gives slight difficulty in diagnosing from sarcoma); more rarely suture material which gives unusual pictures under the microscope, were also encountered. In one case we saw a very marked hyaline

degeneration of the vessels, at the same time a marked degree of endothelial proliferation. This was due to the injection of paraffin some years ago for the relief of a prolapse.

We come now to the question of "exploratory excision of the uterus" and "exploratory curetment," the most important of all the technically minor gynecological operations.

The lesions seen are metroendometritis, nonspecific and specific ulcers, erosions, and carcinoma. Occasionally one has to examine an excised cyst of the vagina or the vulva. The particles submitted for examination from an exploratory laparotomy will here not be dealt with. The nonspecific ulcer, due in most cases to decubitus from a pessary, for example (the uterus being enlarged and prolapsed as a rule), does not show anything distinctive. The syphilitic ulcer shows more especially the great tendency to formation of new blood-vessels besides the vasculitis, the presence of endothelial giant cells and a specially coarse stroma. These characteristics will also serve to distinguish the syphilitic from the tubercular lesion. The metroendometritis of the cervix is interesting in so far, perhaps, as indicating the same process in the body of the uterus.

Erosions are perhaps the most important, not only because clinically they give the most trouble in the diagnosis from carcinoma, but also because the latter is seen so frequently to develop on the basis of an erosion. In a considerable number of the cancerous uteri in Prof. Schottlaender's series, this experience was met with. When the question between a benign erosion and a carcinoma may still be entertained the lesion will naturally not be very far advanced. About 8 per cent. of the cases operated upon during the last year and a half at the Klinik von Rosthorn for carcinoma, were still in the incipient stage. The diagnosis in over half of these was made clinically. The history was of some help, but more telling was the physical examination. *The chief diagnostic points are the marked brittleness of the cancerous tissue and the great tendency to bleed at the slightest contact of the finger or a sound.* The carcinomatous growth has this extraordinary degree of friability in the earliest stage of its development, and it is so strikingly characteristic that when elicited in a given case of erosion it should lead to the strongest suspicion of malignancy.

The exploratory excision of the cervix was performed forty-three times with positive carcinoma findings twenty-one times; exploratory curettage in twenty cases with carcinoma showing

seventeen times. The entire number of carcinoma cases treated at the Klinik in the year and a half from which time the material is studied was 164. In nearly 8 per cent. of these cases the exploratory excision was of positive diagnostic significance. It may be added that these cases showed but comparatively slight involvement of the parenchyma; in some of the cases the new-growth was confined to the mucosa and submucosa and, moreover, to a very small circumscribed area of the parenchyma. The exploratory curetment naturally did not disclose such slight growth of cancer, as it dealt with either cervix or corpus carcinoma for the most part and the extent of the disease was not so evident nor detected as early as in carcinoma of the portio vaginalis or of the lower cervical area.

Besides erosions, small polypous outgrowths from the cervical canal and in some exceptional cases from the portio itself (we have seen true portio polyps) also give rise to suspicion. The microscopical examination should be resorted to in every case to establish the benign or malignant character.

When the carcinoma has progressed so that a series of glands show the lesion, when the case is one of the solid form showing perhaps cornification, the diagnosis is simple enough. In very early cases, however, this becomes much more difficult. In one of our cases, for example, we found only two isolated glands in the section from an exploratory excision which showed evidences of malignant growth. This was a case, too, in which examination one month afterward, when the patient permitted the radical operation, only a slight invasion of the mucosa of the posterior wall of the cervix was found. (Reported in this JOURNAL, October, 1910.)

The so-called "metaplasia" occurring in chronic endometritis, particularly that due to tuberculosis and gonorrhea would cause some confusion in the microscopical examination of the specimen. The ordinary epithelialization occurring in the healing process of erosions must also be taken into account. The pictures which oblique section of the glands give rise to as well as the phenomenon of "Mehrzeilung" are other things that one must learn to recognize because they are apt to be very deceptive; and finally the peculiar effect that application of thermic or chemical agencies produces on squamous epithelium must be taken into account. In our study we have made the following points the essentials for the diagnosis of carcinoma:

For Adenocarcinoma.—The glandular epithelium must be

many-layered. There must be a certain atypical state showing: a, an irregular arrangement of the cells; b, difference in size of adjacent cells; c, differences in the chromatin contents; d, conspicuous absence of cell membranes; e, the presence of giant cells in the sense that the nucleus is very much larger than the average nucleus, or is multiple; f, The presence of one of the forms of atypical mitosis.

For the Solid Form of Carcinoma.—The same atypical condition of the epithelium is required. The basal cells here are not apt to retain the cylindrical type of normal epithelium, nor will they present the uniform height and regularity.

When all these characteristics are present in a given area, no matter how small it may be, we have felt justified in reporting carcinoma. Occasionally one meets with a stratified epithelium in erosion glands which does not show all the above phenomena but yet makes the impression of being atypical; in such case we advised caution! These patients were instructed to report to the Klinik for observation and control from time to time. I must mention one case here in which the examination of material from exploratory excision showed the above picture in one or two glands with the result that the gynecological pathologist reported carcinoma. The general pathologist to whom this was submitted for control reported carcinoma negative. The autopsy later showed that the uterus was the seat of a well advanced corpus carcinoma. The growth was extending down into the cervix and the excision brought away the lowermost portion where the carcinoma was least developed.

Finally, I wish to add that out of fifteen cases in which the material for examination consisted of small fragments obtained by manipulation with the examining finger or the sound, twelve proved to be carcinoma. Most of these, however, were from advanced cases in which ulceration and sloughing were present. The rest of our series of carcinoma cases were confirmed by examination of excochleated material. Excochleation was practised as a rule in all carcinoma cases several days before, as a preliminary step to the radical extirpation.

The great majority of the cases of carcinoma had already progressed to a more or less advanced degree at the time the patients presented themselves for operation at the Klinik. There is at the same time a sufficient number in the same number of patients, who presented themselves with the ordinary gynecological complaints, expecting possibly to be cured by a simple curettage or

a plastic operation, in whom, however, the careful clinical examination brought the carcinoma to light. In still others in whom the uterus was removed for other reasons, the malignant growth escaped the attention of the gynecologist because of its deep-seated position or the very early stage of its development.

The careful routine pathological examination, however, succeeded in discovering the carcinoma. Not only, therefore, can the laboratory methods be depended upon to be of help in doubtful cases, but their steadfast application in the examination of all material removed during surgical operations on the uterus can be expected to reveal the malignant growth at the period most favorable for its radical extirpation, when it is localized to the mucosa alone or has involved the parenchyma slightly, and, moreover, when the glands and the parametrium are still free.

While we are struggling with the problem of the ultimate cause of carcinoma, we may hope to still further improve the mortality statistics from carcinoma by adding to the achievements of the brilliant surgical technic, the important aid in establishing the timely diagnosis that the laboratory methods at our disposal have made possible.

I wish to take advantage of this opportunity to express at least a part of my personal esteem and high regard for Professor Schottlaender and to thank him for numerous courtesies and invaluable help and instruction accorded me during my stay at his laboratory.

50 E. NINETY-SIXTH STREET.

A NOTE ON THE ETIOLOGICAL INFLUENCE OF PREGNANCY UPON MOLLUSCUM FIBROSUM.

BY

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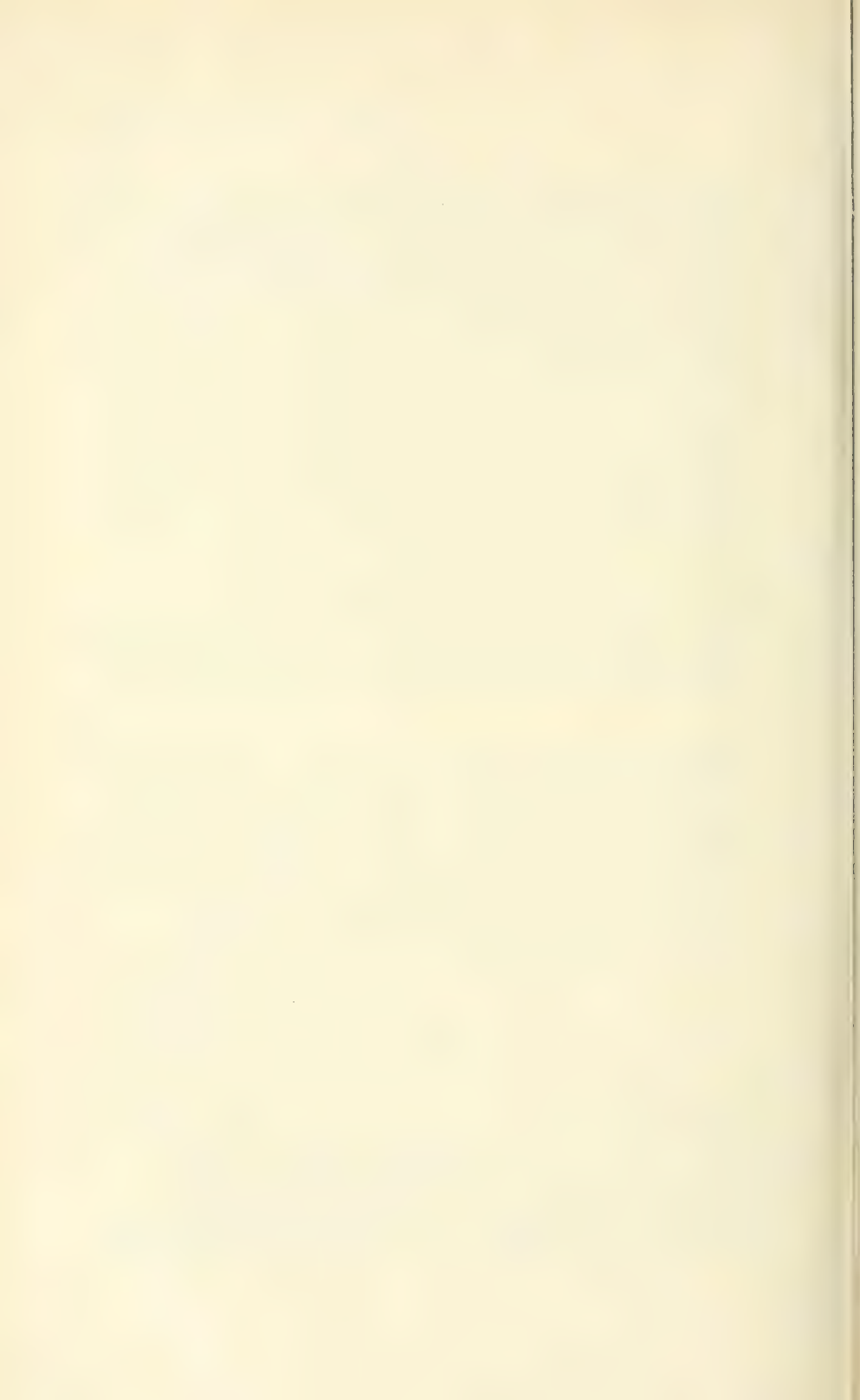
(With plate.)

Brickner's interesting monograph on fibroma molluscum gravidarum in the AMER. JOUR. OBST., vol. liii, 1906, describes for the first time a variety of molluscum fibrosum that is obviously peculiar to pregnancy. My case illustrates a different phase of the subject which is not noted by Brickner, viewing the subject from the gynecological point of view, nor by Stelwagon in his exhaustive work on dermatology.

Mrs. R. æt. thirty-eight, VII-para, in the sixth month, pre-



MOLLUSCUM FIBROSUM.—(HIRST.)



sents the appearance shown in the photographs. Her mother had the same affection to a marked degree. At the age of eighteen four or five typical growths of molluscum fibrosum appeared on the anterior surface of the body, but did not increase in number. The woman married at twenty-five, became pregnant for the first time at twenty-six. During the first pregnancy the growths increased rapidly in number. After delivery, the numerical augmentation ceased, but the growths already developed remained. In each successive pregnancy, including the present which is the seventh, there was an increase in the number of the growths, but no such increase in the intervals between the pregnancies. On this point the patient has repeatedly, emphatically, and clearly declared herself.

This case differs from Brickner's in the appearance of the disease to a very moderate degree before impregnation, in the absence of pigmentation, in the failure of the growths to disappear after delivery and in their greater size and number.

It differs from the cases described by dermatologists in the influence exerted upon the progress of the disease by pregnancy.

In a conversation with Dr. Stelwagon I was told that such an influence had not been recognized and that the disease in an exaggerated form was very rare in women; that he did not recall having seen a case.

1821 SPRUCE STREET.

MYOMA OF THE UTERUS, WITH SPECIAL REFERENCE TO DEGENERATIVE CHANGES.¹

BY

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ANALYSIS OF CASES.

BY

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It has always been my contention that a woman who possesses a fibroid tumor that is symptomless and discovered only by accident displays good surgical judgment if she refuses to submit to its removal. This opinion has received support from most well-considered contributions to the subject. In the admirable work on "Myomata of the Uterus" recently issued by

¹ Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

Kelly and Cullen, the autopsy record of the Johns Hopkins Hospital have been reviewed with reference to the general frequency of myomatous tumors. It was found that of 742 women over twenty years of age, dying from general causes, myomatous growths of the uterus were present in 148 or about 20 per cent. From this and similar statistics it is apparent that the incidence of fibroids is much greater than is the incidence of troubles caused by them.

Granted that the mere presence of a demonstrable fibroid is not in itself an indication for operation, we are confronted with the task of assigning the proper indications. Leaving aside the general condition of the individual patient, which is a constant factor for consideration in all surgical procedures, our decision must be compounded of three factors—namely, the mortality from the operation itself, the urgency of the immediate symptoms, and the prognosis of the disease if unchecked by active intervention. As for the first consideration, we find that the mortality of operations in this class of cases as they now come to us is in the best hands from 1 to 3 per cent. In the hands of unskilled or occasional operators it is necessarily somewhat higher. This mortality, while not large, is sufficient to make us cautious in the selection of cases. In all but ultra-conservative quarters it is not sufficient to cause delay of operation in such cases as severe sudden hemorrhage or smaller hemorrhages so frequently repeated as to bring the patient into a condition of grave anemia, nor in the case of extrusion of the tumor or strangulation by twist of a pedunculated growth. Impaction of the growth in the pelvis also may cause such severe symptoms as to defy mere palliative measures, and when sepsis is implanted upon a myomatous condition of the uterus it assuredly requires the aid of operation. Other and rarer complications may make operation the wiser course, but all these are conditions which are announced to both patient and physician in unmistakable terms and our best physicians who combine boldness and prudence will not be long in arriving at a conclusion as to the need for operation, nor will they shirk their duty in advising it.

The day is past when surgical treatment must justify its plea for preference in these cases, even though there is still a disinclination among some to follow the plain indications. The cause of this disinclination is not in the case but in the man himself. I venture to predict that there will never be devised for any ill or disorder so perfect a treatment that it will receive the unquali-

fied assent and support of the body of physicians. Indecision and minds that work on the bias will always be with us, as in every other calling or vocation. I will not, therefore, take up time in trying to convert those who deny the means of salvation, but will rather devote myself to an examination of the third factor in decision—namely, the prognosis of fibroid disease of the uterus in so far as it relates to the behavior of the tumors themselves or to pathological conditions caused by their presence. This is a most important question. To anticipate dangers before they arrive and to devise means of warding them off is to approach the ideal in medicine and surgery as well. However skilful a physician may be in the presence of actual danger, he is not exercising his highest function unless he is so armed with a knowledge of the probable developments of disease as to enable him often to steer his patients away from the rocks. This is the art of prognostics which Hippocrates never ceased to praise, calling it even God-like, probably because it represented the nearest approach to the divine knowledge of the future which could be possessed by man.

This is at the bottom of the great movements in preventive medicine and to a certain extent has been adopted in surgery. Thus the removal of a chronically diseased appendix is a high development of prognostics and comes from our knowledge painfully acquired of the relative risks of such a condition as compared to operation. An effort has been made to place myomatous disease of the uterus among the conditions which demand a preventive operation because of the probability of malignant degeneration of these tumors themselves or of associated tissues.

For consideration we may divide these pathological changes into: A. Degenerations of the fibroids themselves which may be either 1. nonmalignant or 2. malignant.

B. Malignant disease of the body or the cervix of the uterus associated with a fibroid condition of that organ.

My last 345 consecutive operations for myoma of the uterus have been analyzed chiefly with reference to this point. Two hundred and fifty cases immediately preceding those upon which this paper is based were made the subject chiefly of clinical analysis. As the pathological data of this series were found to be less complete than in the present series they have been disregarded, since we felt that the smaller number of cases would give the truer picture from a pathological standpoint.

Hyaline degeneration is the most frequent of the benign regressive changes affecting fibroids. It has been noted as present in a marked degree in thirty-seven cases or about 11 per cent. This does not represent the true incidence of the condition since early hyaline change was not specially noted. Practically all fibroids which attain any size will show this condition in some part of the growth. It is chiefly of pathological interest and possesses no clinical significance until it goes on to the stage of liquefaction and cyst formation. When this occurs the tumors often take on rapid increase in size and symptoms are usually augmented in proportion. The product of this melting process is a material which varies from a gelatinous consistency to a thin watery fluid. Tumors filled with the gelatinous material are often said to have undergone myxomatous degeneration, while those in which the thinning process has gone on to the production of watery fluid are termed cystic. In some series both conditions are together recorded as cyst formation. In our series we found nine instances of myxomatous change and three pronouncedly cystic, twelve in all (3.6 per cent.) This corresponds rather closely with Noble's figures in his extensive collection of 2274 cases of fibroids in which he found approximately 2.6 per cent. of cystic changes. This condition, when it arises, demands operative treatment.

Cullen reports a case in which the tumor weighed 89 pounds and was mistaken for an ovarian cyst. It is chiefly such cases, when one is dealing with a single soft symmetrical tumor of moderate size, that are so difficult to distinguish from pregnancy. The simulation may be perfect and the distinction impossible even with the abdomen open. These changes are probably due to slowly failing nutrition of the growth. When the nutriment is more suddenly cut off the tumor undergoes necrosis. If this occurs in such a way that extravasation of blood takes place into the tissues the tumor presents a peculiar brick red color, which has caused it to be called red necrosis. If blood is not present in excess the tissue elements simply lose their definition and show the ordinary picture of coagulation necrosis.

Usually necrosis affects only a limited portion of the tumor and gives rise to no symptoms. In some cases however the growth may perish *en masse* and this is generally accompanied by more or less severe symptoms. This extensive necrosis is most apt to affect pedunculated myomas where the mechanism

is usually apparent, being due to strangulation of the blood supply or infection. Occasionally, however, an intramural fibroid will undergo sudden necrosis without obvious reason. This is more apt to occur during pregnancy. Necrosis of this sort is a serious condition chiefly because of the danger of secondary infection. A necrotic fibroid which projects into the cavity of the uterus or possibly from the cervical canal always becomes infected and it is important not to mistake the foul sloughing mass for an inoperable carcinoma. Christopher Martin found necrosis occurring in fibroids in about 4 per cent. of cases considered. Noble found it in 119 cases (5 per cent.). In our series it occurred twelve times, or 3.6 per cent. It does not materially increase the danger of an operation unless it be already accompanied by infection.

In sudden necrosis of an entire tumor one finds usually definite symptoms pointing toward interference, such as pain, vomiting, rapid increase in size of the tumor, tenderness, and often some fever. When necrosis takes place in successive small areas it is followed by a deposition of calcium salts which, in turn, gives rise to the so-called calcareous degeneration. This we found eight times (2.4 per cent.). It is practically a spontaneous termination of the life of the tumor and is rather to be welcomed than otherwise. If we add together all noteworthy benign degenerations occurring in this series we have a total of thirty or 9.6 per cent. This is not to be interpreted to mean that approximately 10 per cent. of all fibroids will show such degenerative changes, but that among a series of cases which are considered under present standards to require operation about 10 per cent. are causing trouble largely as a result of degenerative changes which have occurred in them.

Malignant degeneration of fibroids is a matter of much greater importance if it be proved to be of frequent occurrence. The only malignant change which a fibroid itself can undergo is, of course, transformation into a sarcoma. Martin in his recent paper concludes that this occurs in approximately 4 per cent. of all cases. He quotes statistics as follows: Winter found sarcomatous change in 4 per cent. of 500 myomas; Martin found six in 205 cases; Cullingworth, one in 100; Scharlieb, six in 100; Haultain, two in 120; Hirst, three in 189; McDowell, twenty in 1000 cases. He himself encountered nine cases in 380 abdominal sections for myoma. These collectively total about 2 per cent. of sarcomas presumably arising upon a myomatous base. He

goes on to say that "probably many other cases thought to be primary sarcomata have originated in unrecognized myomata," and from this assumption justified himself in raising the true proportion to 4 per cent.

Bland-Sutton, however, has taken a directly opposite view and states that quite possibly sarcomas, which have been considered as derived from preceding myomas, have been sarcomatous from the beginning. Noble in his large tabulation found only thirty-four cases of sarcoma or about 1.5 per cent. It is not stated that these cases were all instances of sarcomatous degeneration of myomas and it is quite likely that some at least were mere associations. Kelly and Cullen found sarcomatous degenerations or association in seventeen out of 1400 cases (1.2 per cent.) In our series we found four cases, 1.2 per cent. which were diagnosticated pathologically as sarcoma. In the first case the tumor, which was a small round-celled sarcoma, gave no evidence of its being derived from a myoma. The second case was a myxosarcoma which also showed no evident connection with an antecedent myomatous condition. It seemed rather probable that such was not the case. The third case involved the ovary and it is difficult to see what possible connection the fibroid condition of the uterus could have had in the origin of such a different condition. In the fourth case the sarcoma was in no way connected with the uterus. Clinically there was nothing to suggest such a malignant change and the patient has remained without recurrence. In this case the patient was operated on primarily for a huge ovarian cyst and the uterus found after section to be the seat of numerous fibroid nodules. The condition had been present for years and the tissues were very atypical in appearance. Under such conditions only those who are skilled in microscopical work know how difficult it may be to set the exact boundary between a malignant and a nonmalignant change.

The personal equation of the pathologist must be taken into account in such cases. It is only thus that I can account for the high percentage of sarcomatous changes found by some authors who counsel minute microscopical examination of various parts of all the tumors present. I am aware that it is by no means impossible for such a transformation to take place, but I cannot believe that this tendency is so marked as is stated by some authors. If it were true, then sarcoma of the uterus ought to be one of the most frequent of diseases, whereas it is compara-

tively rare. Simply to make use of the figures already given, taking 20 per cent. as the absolute incidence of myoma of the uterus in women over twenty, if 4 per cent. be the tendency of myoma toward sarcomatous change we should find sarcoma in 4 per cent. of 20 per cent. of all women or .08 per cent., which is a *reductio ad absurdum*. I do not desire to cast discredit upon the findings of anyone, but I must point out that either the experience of those who find such marked proportions of sarcoma must be exceptional or else that there is a subtle source of error in the standards of diagnosis. I may state that for years every fibroid uterus which I have removed has been subjected to careful gross and microscopic examination in our laboratory under the charge of Dr. A. O. J. Kelly.

Another point which is urged for the preventive removal of fibroids is the increased tendency to uterine cancer found in myomatous uteri. That this is a real danger cannot be denied. The present series of cases shows eleven instances of carcinoma associated with myoma (3.1 per cent.). Of these, six (1.7 per cent.) involved the body and five (1.4 per cent.) were situated in the cervix. These figures agree very closely with Kelly and Cullen, who found in 1400 cases of myoma forty-three of associated carcinoma (3 per cent.), of which twenty-five (1.7 per cent.) were in the body and eighteen (1.3 per cent.) in the cervix. Martin found six cases of carcinoma in 380 (1.6 per cent.), while Noble in his large collection found 2.8 per cent. of carcinoma and among his personal cases 4 per cent.

This is an alarming incidence of a desperate condition with one which is relatively innocent, and if we are able to incriminate myoma in the causation of cancer it will be a heavy stigma. The instances of cervical carcinoma can hardly be credited to the presence of myomata in the body of the uterus. Not only is it difficult to imagine any way in which a fibroid should exercise such a malign influence upon the cervical epithelium, but clinically we gain no impression that such is the case. Bearing in mind that the uterus is the most common site of carcinoma as established by the large statistics of Welch, who found that cancer of the uterus furnished 29.5 per cent. of 31,482 cases of primary cancer, we must be prepared to find it associated with such a frequent pathologic condition as myoma, which furnishes at least a tenth of all gynecologic work. This Association should cause no more remark than the simultaneous presence of car

cinoma of the breast, stomach, bladder or rectum, all of which have been noted in a number of instances.

Concerning carcinoma of the fundus, the case is different. If the presence of myoma does not influence the development of malignancy in the uterine epithelium, we should expect that the ratio of cervical to corporeal cancer would remain unaltered. This ratio is estimated at from four to one (Cullen) to ten to one (Martin). My own statistics are more nearly in accord with the lower ratio, but in any case there can be no doubt that cervical cancer predominates largely over that which is primary in the body of the uterus.

Now of the cancers which are found complicating a fibroid condition of the uterus, we may see by a glance at the above figures that the preponderance is reversed and fundal cancer is found to be more frequent than that of the cervix. It seems a fair assumption and one which is also suggested by the known tendency of chronic nutritional and irritative influences to excite malignant change, that a well defined number of cases of cancer of the body are precipitated by the presence of myomata. This, to my mind, is the most serious of the degenerative processes set in motion by a fibroid tumor, since it always arises insidiously as do all cancers of the fundus. Sarcoma is no less insidious though less common as a derivative of myoma. Together they constitute a menace to life of no mean degree, and though the results of observation and analysis of this series of tumors do not support the pessimistic views of some gynecologists, the danger of malignant changes due to myomata is a fact which cannot be disregarded. The early operation for fibroids does not rest upon this factor alone and high statistics of degeneration are not needed to support it. "A good cause can sustain itself upon a temperate dispute."

The only point in which I would differ from those who believe in the higher percentage of malignant change, is in not advocating the removal of an accidentally discovered fibroid that is giving no symptoms. This is not a large class of cases and therefore not a very important difference. Any tumor that begins to give trouble or atypical symptoms, even if only an irregular discharge, I believe should be removed. The tendency toward malignant degeneration gives me one of the elements of my belief. The remainder are furnished by the greater frequency of troublesome nonmalignant degeneration, the likelihood of hemorrhage and chronic anemia with cardiac and

vascular disturbances, the frequency of pain and more or less dangerous pressure effects upon the urinary tract, the intestines and surrounding organs, the proven failure of fibroids to cease from troubling with the menopause, and the certainty that in a large percentage of cases delay merely means operation later under less favorable conditions.

1634 WALNUT STREET.

INTRAVENOUS INJECTION OF MAGNESIA SULPHATE IN BACTERIEMIA.*

BY

RALEIGH R. HUGGINS, M. D.,

Pittsburgh, Pa.

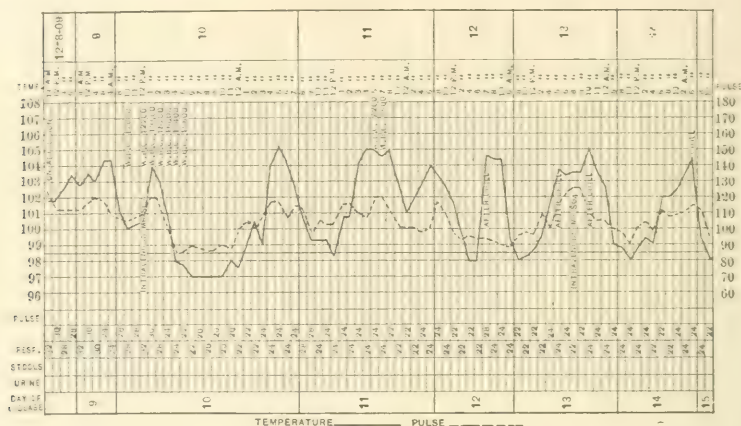
(With six charts.)

FOR a long time the writer has been interested in the success of magnesia sulphate in the treatment of erysipelas and tetanus. Its use locally in infection has been attended by very gratifying results. In the opinion of the writer there is no better local application than a continuous bath in a solution of magnesia sulphate in the treatment of a rapid spreading lymphangitis, the result of a virulent infection. There has been no rational explanation offered as to how such good effects are obtained when this drug is applied locally. It has been suggested that it is by direct bactericidal action, but this has not been borne out by clinical experience. Others have claimed that osmosis plays an active part, but when we stop to consider that other salts which influence osmosis to a greater extent do not exert the same beneficial action, then it would seem that this is also disproven.

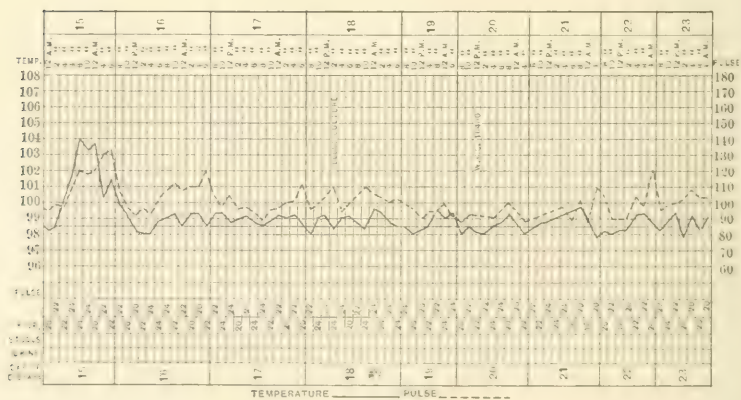
In a study of drugs causing hyperleukocytosis it was determined to find out, if possible, whether magnesia sulphate might act in this manner when administered intravenously. After a careful study in both rabbits and the human, it was decided that it did not produce a regular increase in the leukocytes when thus administered. When given in the presence of infection it appeared in some instances to cause an increase in the leukocytes, but so far as we have gone there is no regular increase and neither is there a decided increase in the polymorphonuclear cells. The presence of a 1 per cent. solution of magnesia sulphate in the culture tube does not inhibit the growth of the streptococcus.

* Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-21, 1910.

In a case of tetanus treated by my friend Dr. Willetts, examination of the spinal fluid previous to the injection of magnesia sulphate showed but one lymphocyte per cubic millimeter. Twenty-four hours later a count showed the presence of 2,000 polymorphonuclear cells per cubic millimeter. I am inclined to



CASE I.—CHART 1.

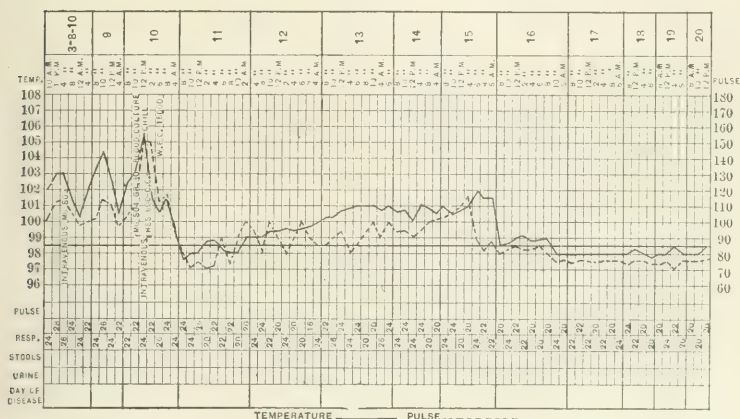


CASE I.—CHART 2.

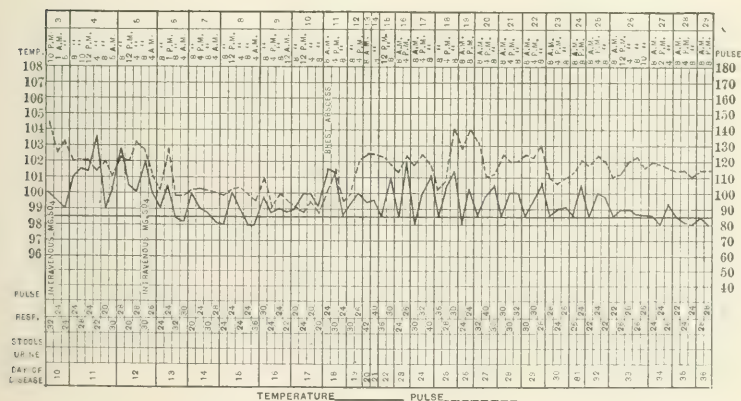
believe that in some manner it assists in raising the resistance of the tissues, but to what action its curative effect is due seems purely speculative.

Many interesting phenomena were noted during these experiments. As demonstrated by Meltzer and Auer magnesia sulphate given to rabbits intravenously or subcutaneously in large doses

effects chiefly the respiratory system. In none of these animals did the injection cause an increase of the inspirations in depth or frequency. In other words, they did not seem to excite the respiratory function but, on the contrary, to inhibit it, and as the injection slowly proceeded the inspirations became shorter and



CASE 2.



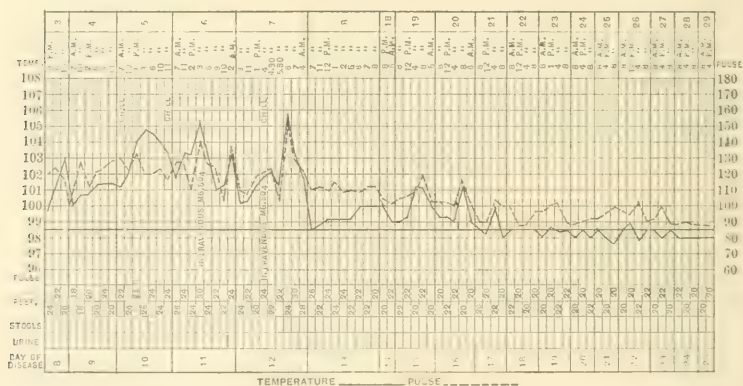
CASE 3.

shorter. The most striking and general effect in the intravenous injections of magnesia is the production of anesthesia. It differs from all other anesthetics in that the stage of irritability or excitement is lacking, the state of anesthesia coming on quietly and without any sign of an irritating influence. In the doses given, 1 c.c. of a 25 per cent. solution, death was not pro-

duced, but oftentimes it would be followed by embarrassed respiration and light anesthesia.

The injections were made slowly into the ear vein. If given rapidly, respiration would suddenly become shorter and gradually cease. Meltzer and Auer in a series of experiments demonstrated that the conductivity of nerve trunks can be interrupted by the local application of magnesia solution, and that a more or less complete block for afferent and efferent, for normal or artificial impulses can be established.

The effect of intravenous injection of magnesia sulphate upon the alimentary canal was of considerable interest. It is generally considered by those who are interested in the special study of physiological action of drugs that the saline purgatives produce



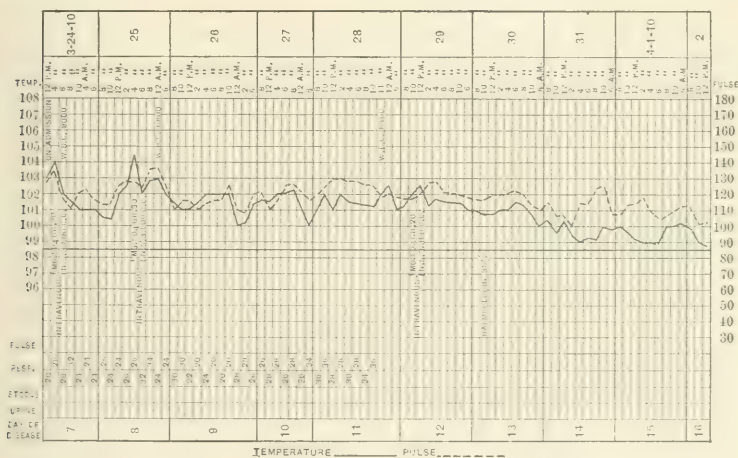
CASE 4.

their effects in several ways: first, by preventing the absorption of fluid from the alimentary canal, thereby retaining liquid in the tube; second, if given in proper concentration they cause a pouring out of fluid into the intestine, thereby adding to the amount which has been swallowed; third, it is supposed that they stimulate peristalsis and so hurry the contents of the bowel toward the rectum.

These views have recently been placed in doubt as to their correctness by investigations carried out by MacCallum, who confirms the earlier studies of Aubert to the effect that these purgatives act indirectly upon the intestinal wall if they are given intravenously. On the other hand, Meltzer and Auer have denied the accuracy of these observations and assert that the intravenous injection of sulphate of sodium fails to produce purgation,

but rather tends to constipation. Some of the difference in results may be due to the character of the animal which was employed for experiment. It is well known that dogs are not purged with elaterium, which is one of the most active watery purges when given to human beings that we have.

Hirtz and his coworkers believe from their experiments that some of the magnesia salt is absorbed from the stomach and then acts through the blood, stimulating the neuromuscular mechanism of the colon. The observations made in the intravenous use of magnesia sulphate during the experiments above described show that there is no regular purgative action when magnesia salts are thus administered. It occurred in about 10



CASE 5.

per cent. of the rabbits thus treated, which may have been only a coincidence.

It has a marked purgative effect when injected into the peritoneal cavity. During this study a number of intravenous injections of magnesia sulphate were administered to human beings. It was determined that Magnesia sulphate could be given intravenously without any apparent harm to the patient. Experiments show that a 1 per cent. solution of magnesia sulphate in normal saline, will not produce hemolysis of the human blood. It will not precipitate the globulins as claimed by Teubusher when given in this dilution, nor have we seen any effect upon the specific gravity of the urine.

It was decided that 30 grains of magnesia sulphate in 8 ounces

of normal saline can be safely administered intravenously to the average individual. It must be given slowly into the vein at a temperature of 105 to 108°, the time occupied in allowing this quantity to run into the vein being twenty minutes. If allowed to flow into the vein rapidly, respiration becomes embarrassed and the patient complains of a sensation of heat all over the body. It has been given in this manner fifty times, either by the writer or his assistants, and the result in many instances has been extremely gratifying. It has been given at intervals of twenty-four hours for several days.

It was during these experiments that it was determined to try its use in a patient suffering from puerperal infection. A number of cases which were beginning a typical course, similar to others who died in spite of all treatment, have been treated by intravenous injection of magnesia sulphate with apparent benefit. Its use has been limited almost entirely to the treatment of puerperal infection and the number of cases treated are too few to draw definite conclusions from.

I have been pleased with its apparent marked effect in such cases and submit to you six charts showing the temperature curve after its administration. The patients whose charts are shown gave streptococci in pure culture from the blood serum in all except one. This case, No. 1, was seen early, three or four days after the onset of the symptoms. She was extremely ill, but when admitted the blood cultures were sterile. Cultures from the uterus showed streptococci. All of the cases whose charts are shown were extremely ill and the result obtained by the use of magnesia sulphate is the only excuse offered for this report. The results above reported in the treatment of infection from the uterus prove nothing, but so far as I know they are the first cases in which magnesia salts have been administered intravenously in the treatment of disease. We should remember that magnesia salts are toxic and when administered into the blood stream it must be done with great care and with a full knowledge of its danger. Later studies may demonstrate their inefficacy; also that the danger of administration is too great to justify the risk. This work of administering magnesia sulphate has been merely an incident in the study of hyperleukocytosis.

In conclusion I may say that a great advance will have been made if the natural aids which are called upon to overcome infection after it has occurred can by some means be placed on the alert, so that they stand well organized and ready to give

battle to an anticipated invasion of bacteria. If this is possible, infection which might otherwise be most virulent in its progression can be overpowered and checked in its onset before a rapid multiplication of the germs and diffusion of their toxins occur.

We are at present inclined to speak glibly about certain changes in the blood incident to infection and various forms of disease. It is well to remember that the study of these important phenomena is still in its infancy and that much remains unproven. There is great opportunity in this field not only for the pathologist but for the clinician as well, because to him is given the opportunity to make careful observations at the bedside, which demonstrate the practical value of certain conclusions in spite of theoretical deductions to the contrary, which some time emanate from the laboratory. I am greatly indebted to Drs. Willetts and Denner for their patience and kind assistance in this work.

1018 WESTINGHOUSE BUILDING.

TWO RIGHT-SIDED FEMORAL HERNIAS IN THE SAME PATIENT.*

BY

N. STONE SCOTT, M. D.,

Cleveland, Ohio.

THE mere fact of two hernias, whether existing or coexisting in the same patient, is quite unnoteworthy. Ferguson reports operating twelve hernias for a patient at one time. But there are many forms of hernia that are rare; so many in fact, that the finding of some form of rare hernia is by no means uncommon, paradoxical as that may sound. Their rarity, however, makes them none the less important; some of them because of their own peculiar problems, and some because they are liable to be overlooked when located in the vicinity of a more common variety, or to be mistaken for such.

The case I wish to report will of necessity limit my remarks to femoral hernia; and your attention is first called to a certain variety in which the hernia is situated external to the blood-vessels. The majority of authors use the terms "complete" and "incomplete" to signify the extent of the progress of a hernia through the abdominal wall; a few, unfortunately, make use of

* Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists, held at Syracuse, September 20-22, 1910.

the adjectives "external" and "internal." Such a confusion of terms caused a good friend of mine to think he had found, in the literature, a case of this sort which might be of assistance to me, although it proved to be of the common complete variety. I have followed the phraseology of the majority of authors, using the terms complete and incomplete to denote the extent of the progress of the hernia from within out; reserving the terms "external" and "internal" to signify the relationship of the hernia to the blood-vessel; an external femoral hernia being one which descends by the side of the vessel farthest from the median line of the patient, while the internal femoral hernia is situated on the side of the bloodvessel nearest to the median line. So far I have been able to find but one case reported in the literature of this external femoral hernia.

The common form, the internal femoral, passes under Poupart's ligament, internal to the femoral vessels, the sac of peritoneum lying on the pectineus muscle with a prolongation of the fascia iliaca interposed, as well as the pectineal portion of the fascia lata, and covered by the extension downward of the fascia transversalis. In the external hernia the sac descends into the groin external to the bloodvessels, but the relationship to the other structures is the same as in the internal hernia. Ferguson, in his excellent monograph on hernia, gives an unusually exhaustive list of the varieties; under femoral, he gives the form which descends internal to the bloodvessels anterior to and posterior to these vessels, but says nothing about the variety external to the vessels. The one case, already mentioned, which I have found in the literature, is described by F. F. Brichard in his *System of Surgery* (page 601). After speaking of the common form, he says:

"But there is another form of femoral hernia passing underneath Poupart's ligament which, though rare, deserves to be described and kept in mind by all surgeons who interest themselves in the subject in hand. In this variety the sac, instead of being forced downward into the groin to the inside of the femoral vessels, is protruded external to them and internal to the anterior superior iliac spine."

Complete or incomplete femoral hernias internal to the bloodvessels are found on both the right and left sides in the same patient at the same time. Of such multiple femoral hernias every experienced operator can give numerous examples. It is my privilege, however, to report a case of multiple femoral

hernia consisting of an internal and an external hernia, both situated on the same side of the patient. This case is, so far as I have been able to learn, the second to be reported of the external femoral hernia, but the first with a combination of the two varieties, external and internal, and those both on the same side.

History.—Miss W. Aged thirty-seven years, a trained nurse, from the State of Michigan, gave an exceptionally clear account of herself. The family history showed no tuberculosis, cancer, or hemophilia; a grandfather and one uncle suffered from hernia. The ordinary diseases of childhood she had passed through, including diphtheria at twenty-four years of age, following which there was a temporary partial paralysis. Otherwise her health was exceptionally good. She menstruated first at thirteen years of age and has been regular since. Two years prior to consulting me she first noticed a hernia. It was never very large, being at its maximum the size of a small hen's egg, and was easily replaced. She had noticed that the tumor seemed to vary considerably not only in size but in position, or as she expressed it, "It seems to come at different places at different times." After wearing a truss for a number of months, she went to Ann Arbor and was operated. Within a few weeks a hernia again appeared and without any apparent etiological factor. She described this manifestation as different from her previous experience in that the hernia always appeared in the same place.

Physically she was in good condition, there being no evidence of internal disorder of any kind. Heart and lungs, thyroid, nervous system, digestive, excretory, and genitourinary systems were all apparently normal. In the right groin was noted an oblique scar, some 3 inches long, evidently the scar of an operation for the relief of a femoral hernia. Toward the outer end of this a weakness of the abdominal wall could be discerned, and on standing or straining the hernial sac protruded noticeably.

A diagnosis was made of right femoral hernia; this was operated in June, 1909. A well defined sac was found emerging from the abdomen external to the bloodvessels, and beneath Poupart's ligament. On examining the site of the old incision it was evident that the first operation was performed for the ordinary form of femoral hernia, where the sac emerges internal to the bloodvessels and that the operation had been entirely successful, so far as that hernia was concerned. It was also evident from the location of the scar tissue that the site of the hernia external to the bloodvessels could not have been previously explored.

In operating I followed the same general principles as in the ordinary variety of femoral hernia, Poupart's ligament and the fascia below were overlapped and stitched. Up to the present time there has been no return of the hernia.

Judging from my experience in this case the operative problem of the external is no more difficult than that of the internal variety; in fact, the operation for the two forms of femoral hernia at one time, the external and internal, seems hardly more difficult than the operation for either alone, except that greater care needs to be taken in order to prevent constrictions of the bloodvessels. We have here a case of external complete and internal complete hernia occurring on the same side, the patient's right side. Following the first operation they were not coexistent, but from the history of the case it seems probable that prior to that time they were coexistent.

The points of especial interest as illustrated by this case are:

1. The rarity of external femoral hernia.
2. The importance of making a correct and accurate diagnosis.
3. The possibility of the coexistence of an external and internal femoral hernia on the same side of the patient.
4. The ease of overlooking the external when it is associated with the internal or more common form.
5. The operative technic of the external femoral hernia, not essentially different from that of internal femoral hernia.
6. And, lastly, where both varieties are operated on the same side, the great care necessary to prevent interference with the functions of the bloodvessels.

603 CITIZEN'S BUILDING.

OBSTETRIC SURGERY IN PRIVATE PRACTICE.

BY

K. H. AYNESWORTH, M. D.,

Waco, Texas.

Six years ago, I was called out in the country about 12 miles to repair a perineal laceration following a normal labor; shortly afterward I was called again by the same man, to perform the same operation on another patient, following an otherwise perfectly normal confinement. I remembered, then, that shortly before this the subject of *immediate repair* of both perineal and cervical lacerations was the topic for discussion at the regular meeting of the County Society. In this meeting great stress was laid upon the immediate repair of all lacerations following

labor by the majority of the members present; however, some few members took the opposite side of the question. These last based their argument on the fact that the operation was one not easily done by the general family physician who, in this part of the country, delivers probably 99 per cent. of all women and, furthermore, that the surroundings made it impossible for one not specially skilled in surgical technic to perform the operation with hopes of success; in addition, one prominent member in particular took the stand that, under the circumstances, the danger of serious infection was much greater following repair than if nothing whatever was done. The result of the discussions was to stimulate the physicians present to do more thorough obstetric surgery. This is the reason why the physician had called me in to repair lacerations for him. During the discussions at the County meeting, it was evident that many general practitioners never attempted to repair lacerations at all. Most of them seemed to think that the usual obstetric operations were more difficult than they really are and that, rather than do bunglesome work, they preferred to do nothing at all. When I asked my friend why he did not repair lacerations as a routine procedure, he stated that while at college he heard so much about the dangers of sepsis, saw so many assistants help the operator, and heard him explain how difficult it was to coapt the torn surfaces, that it discouraged him to undertake the operation himself, feeling that the patient was probably better off when let alone; and, further, should any bad result occur, he would be less censured than if he had operated. I took it upon myself to assist him in the next two operations, showing him how easy it really is, even under the trying surroundings of the average country home, to repair lacerations when done immediately following labor. The result was that the glamor of the college professor with his retinue of nurses and assistants seemed to fade out of his mind, and now he is repairing every laceration with the most gratifying results to himself and to his patients.

The foregoing in reference to the repair of lacerations is only one phase of surgical obstetrics, but what has been said applies with equal force to all departments of obstetric surgery. Inasmuch as practically all of the obstetric practice is done by general practitioners, the question naturally arises, why should they not be the best qualified to diagnose correctly and deal properly with all surgical cases met with? The general surgeon or the gynecologist never has the experience with normal labor that the general man has; neither has he the opportunity to observe the

minor variations from the normal; he is not called in except in the cases demanding major work, for the practitioner does all of the minor surgery himself. This is the age of specialism and the practice of obstetrics has as much reason for being called a separate branch as has any other department of the healing art. Every general practitioner is *ipse facto* a specialist in this one line of work whether he calls himself so or not, for it is a limited field of work in which he does all that is done in the case. Then, if this be true, which no one can question, why should he not be fully equipped to do *all* of the surgery in this department, since it is a fact that he is in a position to do it better than anyone else? Why does he not do it? The answer to all of these questions lies in a few words. It is this: *the training which he receives in college does not properly fit him to do the surgical work as it must be done in the average home.* In colleges, he sees the professor dressed for the operation, with from three to five nurses and assistants, with a trained anesthetist, with special tables and operating-room furniture, with special instruments, with gallons of sterilized water and sterilized basins, with the most perfect light, and with everything, in fact, that modern scientific surgery demands with which to carry out the canons of the art.

A more untrue setting could scarcely be given than this, when compared with the setting of 99 out of every 100 homes in which the general practitioner is *compelled* to do his work. Not only do our teachers of obstetrics mislead, unconsciously I trust, the students, but the text-books which they write exemplify even *more fully* the great difference between what is taught the students and what *must* be done in daily work. In other departments of medicine, as exemplified by surgery, etc., such is not the case; for most patients requiring surgical operations can be and are taken to hospitals; or, if no hospital is accessible, the home is prepared as nearly like a hospital as is possible before the operation is undertaken. The surgical operation, if it is an emergency, can wait the few hours necessary for preparation; then, again, there is no such thing as a normal physiological operation or a physiological process leading to operation as it is in practically all obstetric operations; for the great majority of them come more or less as surprises to the attendant, following what began as a normal physiological process. Then, too, the fee for operations is large enough to justify the extra precautions, and the danger of performing the operation without these precautions justifies their being taken. Then, again, if hospitals were near at hand and there were no

prejudice against going to them for every case of obstetrics where all the professor's teaching could be exemplified, *it is wholly unnecessary*, for bountiful experience has proved that the work can be performed in the homes with equal success, provided the attending physician is able to observe the fundamental principles of surgery, although the procedures are greatly modified from those carried out in hospitals.

Gynecologists know that if all obstetrical surgery were properly done their work would be materially lessened. If this is true, why is it not done properly? The students return home from college full of knowledge and resolute with ambition to do the right kind of work; they find that few men of their acquaintance are doing anything at all in a manner which will approach what was taught in college and they soon find that they, too, cannot have nurses, assistants, and apparatus and the inevitable takes place: not being able to do what was taught and not having the ingenuity to recast the whole procedure, yet retaining all the good in it, they at once relapse into methods unworthy their training and very soon cease to do the surgery which they encounter, but trust to nature to help them out of difficult situations, thus leaving a trail of bad results in their wake. It has been my fortune to have a rather good opportunity to observe the results, both as a gynecologist and as a consultant.

What is the remedy? Let the subject of obstetrics, above all others in the students' course, be taught in a more natural and reasonable manner; let it be taught with the same simplicity as medicine, or general surgery, or any other subject, *with this one added fundamental principle that the surroundings of actual practice be taken into consideration*. There is very little difference between the sick man at the hospital and the sick man in the home, for all necessary examinations can be made at the bedside with simple instruments, but the excretions and secretions, blood, etc., can be examined at the office; the one great difference is that it is not an emergency which must be met right now. The eye, nose, and throat men have practically everything at hand, just as well as the hospital; the surgeon has time to make ready, or to go to the hospital, and the patient is willing to wait for preparation, or to go to the hospital; and so on with all the different branches of medicine, except with the surgical side of obstetrics.

In the following, I wish to outline the practice of surgical obstetrics as I have been doing it, and report something over

100 cases embracing practically every surgical complication, except Cesarean section and symphysiotomy. This work was done under the most trying circumstances in the majority of instances, and the results justify the statement that all operations which do not require the opening of the abdomen can be as safely done in the home, if sensible precautions be taken, as in the best hospital with all of its assistants and adjuncts. The operations were as follows:

High forceps	4 cases
Medium forceps	67 cases
Low forceps	21 cases
Podalic version	4 cases
Placenta previa	4 cases
Retained membranes, removal of.....	6 cases
Abortion requiring intrauterine procedures..	15 cases
Perineal Lacerations	42 cases
Eclampsia requiring delivery	8 cases
Cervical lacerations	10 cases
Vaginal lacerations and perineal lacerations combined	32 cases
Labor complicated by tumors requiring forceps	4 cases
Tetanic contraction of the uterus, requiring operation.....	2 cases
Prolonged pregnancy, requiring delivery	6 cases
Pelvic contraction, requiring premature de- livery	2 cases
Manual dilatation of the rigid cervix	6 cases
Strictured vagina, requiring incision.....	1 case
Undilatable cervix, requiring incision	1 case
Episiotomy	3 cases
Dead fetus, requiring removal.....	3 cases
Overgrowth of fetus, requiring instrumental delivery	1 case
Hydatid mole	2 cases
Face presentations, requiring version.....	3 cases
Face presentations, requiring change to ver- tex	1 case
Cord around neck, requiring cutting and deliv- ery	2 cases.

In the above enumeration of operations I don't wish to leave

the impression that each one means a different patient, for some had several operations, for instance: forceps, cervical and perineal lacerations combined with vaginal tears.

Preparation for Operation.—For years, when I did a general practice, it was my invariable rule to instruct the family to have ready the following as soon as the pains commenced, and to notify me immediately: two wash basins, scrubbed and scalded; two gallons of cold boiled water; one gallon of hot boiling water; a dipper to be boiled in the water and left in (this to be used in transferring water from one receptacle to another); also, to have ready, in case of need, one-half dozen towels, two sheets, clean pillow cases and fresh gowns for patient, and the patient was instructed to bathe and put on a freshly laundered gown and to move out the bowel by enema. These were routine directions in all cases. The family was directed to get a common empty 10-pound lard can, which is found in almost every home, or to secure a similar bucket with a top to it and boil the water in it with the top slightly raised for thirty minutes, then to push down the top, remove from the fire, and let alone; the hot boiling water was kept in the family kettle ready. I carried with me every instrument and dressing needed for any emergency. While this may sound formidable, theoretically, yet in practice it is not, for a bag 20 by 10 by 10 inches will carry everything. A copper sterilizer, made to fit inside this bag, will hold the instruments necessary: Tarnier axis traction forceps, medium and short forceps, two pairs of scissors, one-half dozen artery forceps, two knives, two medium Kelly vaginal retractors, needle holder, needles, two single-tooth volsella, transfusion set, fountain syringe, catheter, gloves, sponge holder, four towels, and what else the operator might need, provided he tries to do efficient work with few instruments. On top of this sterilizer may be carried cotton, gauze, extra towels, gown or rubber apron for operator, antiseptics, ligatures already sterilized in tubes, ether or chloroform, Kelly pad, liquid soap, concentrated salt solution, etc., that might be needed. This bag is not large nor unwieldy, but is sufficient to carry everything actually needed with which to do good work. The very simplicity of it makes it serviceable, in contrast to some on the market which are too elaborately equipped and beyond the price of many practitioners in rural districts.

When called to operate, *e.g.*, forceps operation, the necessary instruments are placed in the copper sterilizer; also, four towels,

fountain syringe, gloves, etc., as may be needed for the particular case, and they are put on the cook stove and *boiled* for fifteen minutes. In the meantime, the patient is being prepared, generally by the doctor since no nurse is at hand. This consists in bringing the patient across the bed, under the side of which has been placed the family ironing board or a leaf out of the dining table, or any piece of plank that may happen to be around the home, to support the hips on a level with the side of the bed; either clipping the vulvar hair short or shaving it off; scrubbing the external parts and the vagina according to the wishes of the attendant. Two neighboring women, one on either side, hold the legs and otherwise support the patient as the physician may direct. A medical man is called in the meantime to give anesthetic; should there be no physician accessible, the attendant must guide the administration of the anesthetic himself given by some woman who might be present, as I have done on a number of occasions. When the instruments and dressings are ready, the fountain syringe filled and hung to a nail on the wall, and the patient asleep, the finishing touches are done the toilet of the patient by the attendant himself; two basins are put in chairs and filled with sterile water and whatever antiseptic added that the physician may prefer; gauze sponges are cut from the sterile gauze brought by the physician; one sterile towel is wrapped around each leg and held there by boiled safety pins; one towel is placed between the patient and the Kelly pad; another towel laid over the abdomen and between the limbs so that now the field of operation is completely isolated and protected. The instrument sterilizer is brought in and placed in a chair by the side of the operator and everything arranged to begin the operation. The hands receive their final cleansing, rubber gloves are drawn on, the examination to determine the exact position is made, the suitable procedure decided upon, and when the patient is properly under the anesthetic the operation is undertaken.

When the operation is finished, a most searching examination, both by touch and by sight, is made to determine the extent of the injury, if any has occurred, in order to make the necessary repairs. This should be done before the afterbirth has been delivered, unless it comes away at once. I have made it a rule to determine the extent of injury as soon as the cord is cut, and, unless the placenta comes away immediately, to pack the vagina with sterile gauze and begin whatever repairs that may be necessary. If the cervix is badly lacerated, and especially if there is

hemorrhage from torn cervical vessels, the vessels should be caught up and tied and laceration repaired. The anterior and posterior lips of the cervix are caught with small single-tooth volsella and brought right into the outlet, and chromic catgut sutures are placed as needed to hold the torn surfaces together. This is so easy and so simple that I have wondered why there is such a furor against its being done as a routine procedure; some say that the repair interferes with drainage; others, that it is a difficult operation; others, that it is unnecessary. None of these excuses for not doing the cervical repair is valid when considered in the light of modern conceptions of surgery; and, if the repair of a torn cervix is not a surgical operation, then what is it? Any one who does the operation knows that drainage is not interfered with, unless one wishes the placenta to drain out. The operation is easier to do than a perineal repair; a reply to those who say it is unnecessary is in the complaints of the numbers of women who seek the hospitals for relief for the local and systemic effects of unrepaired cervical lacerations. It is true that healing is often not complete and sometimes not at all; however, is this a valid excuse? If the placenta is not delivered, I defer the cervical repair until after the outlet has been attended to, then deliver the placenta and then, the last thing, the cervix is sutured.

Lacerations of the outlet rarely involve the perineum alone, as there are frequently vulvar and vaginal tears also, which must receive the same careful surgical attention. In college, we all heard so much about the great necessity of bringing the parts together layer by layer, fascia to fascia, muscle to muscle, etc., with the warning that if not so done, the condition following would probably be worse afterward than if nothing had been done at all, leaving the patient to be operated on later by the surgeon. Now, this is another of the "scare crows" in obstetrics. It takes a very careful dissector to demonstrate these layers on the cadaver and on the live subject it is practically an impossibility. What is always done and can be safely done is to bring torn parts together in as natural a position as possible, paying particular attention to see that the suture is so placed as to coapt each side accurately; the mucous membrane must be accurately sutured, using extra stitches if necessary. If the sphincter is torn across, the ends must be picked up and brought together by special sutures; so with the levator ani and the rectal mucus membrane when torn, but in the other parts it is practically "meat to meat" only, for the layers cannot be differentiated. This is not a dis-

cussion on the methods of repair of cervix and perineum, but merely a statement to encourage the greater practice of these simple operations and to protest against the magnification of simple operations into formidable surgical procedures, so that the average family physician will not hesitate to perform all of them as a part of his regular duties, in attending cases of confinement.

In referring to the literature bearing upon the subject of surgical obstetrics, one is impressed with the frequency of it none the less than with the discussion of it as a hospital procedure, rarely ever taking into consideration that the hospital case is the exception rather than the rule. The directions given by one writer are simply prodigious, requiring *pages of printed paper*. Another writer uses so many assistants and nurses for his private practice that one must infer that he either has a millionaire *clientele*, who can pay for these extras, or else that he is indulging a hobby for which he is willing to pay liberally; another reminds one of an ambulatory obstetric hospital. Some men spend their earnings on automobiles, others on yachts, others in collecting rare works of art, and still some others in having a retinue of assistants, who magnify the simplest surgery into nothing but major operations. These men, I presume, rely on team work. I wish to commend one writer, in particular, whose stand for the simplifying of all obstetric surgery as worthy of emulation.

TWO CASES OF ANTEPARTUM INFECTION.

BY

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AN Italian girl; æt. eighteen, pregnant seven months, a primipara, menstruated last on March 18, 1910. The pregnancy was normal up to the twenty-seventh of August, when she had a chill which was followed by fever. Another chill occurred on the twenty-eighth and another severe chill, lasting about one hour on the twenty-ninth. The temperature during these three days averaged from 101° to 104° . There was nothing apparently to account for her condition. The chest examination was negative; there was no localized pain or tenderness in the abdomen. About 3 P. M. on the thirtieth, labor started in and the patient was referred to me by Dr. P. V. Carlin, who had been

attending her up to that time, but was unable to see her that evening.

I saw the patient at 9 P. M. The temperature was then 102° , pulse 116, and the labor pains, not hard, were about five minutes apart. In spite of the fever she did not appear very ill. The fundus uteri was four fingers' breadth above the umbilicus with the child in L. O. A. I could not hear the fetal heart, and felt that I was dealing with a dead, probably infected fetus.

An internal examination made at 10 P. M. showed the cervical canal obliterated, admitting three fingers, the edge thin, membranes intact, and the head on a level with the ischial spines. At 1:45 A. M. the membranes were visible at the vulva and were ruptured artificially. The amniotic fluid, normal in amount, was gray and turbid with many dark gray flecks floating in it. Its appearance I accredited at the time to the fact that there was a dead macerated fetus present. The child born twenty-five minutes later was, however, alive. The heart could be felt beating very feebly by pressing the fingers up under its ribs. It could not be resuscitated and during the time it was worked over did not even gasp. Its length was 36 cm. The placenta, expressed fifteen minutes later, was, macroscopically, normal.

The mother's temperature remained at 102° and the pulse around 116 throughout the whole labor. On the following day the temperature was 99° , pulse 90. On the second day the temperature was 100° , pulse 86, and on the third day the temperature was 98° , pulse 80, from which time on, the purperium was afebrile and normal. There was no especial abdominal tenderness and no masses. The lochial discharge was quite normal. The urine examined the day following labor contained no pus, ruling out pyelitis, not uncommon at this period of pregnancy.

The internal examination on the tenth day after labor showed the fundus uteri about on a level with the symphysis pubis in ante-position, movable, fairly well involuted with no masses or tenderness laterally.

I regret that the amniotic fluid of this case was not collected and examined bacteriologically, but there was no opportunity to do so. The case seems without this examination to be one of infection of the amniotic fluid, before rupture of the membranes. As stated above, the fluid was a light gray in color, very turbid, and contained dark gray flecks. It had not at all the color of amniotic fluid containing meconium.

Infection of the amniotic fluid *after* rupture of the membranes is not of uncommon occurrence and is to be guarded against by conserving the membranes as long as possible, and during a dry labor by making few vaginal examinations with strict attention to asepsis. With this condition bacteria make their way up from the genitalia by means of the capillary layer of fluid extending from the interior of the uterus to the vulva.

Infection of the liquor amnii *before* rupture of the membranes is of relatively rare occurrence. Its mode of origin is probably principally from the vagina. Pathogenic organisms finding their way through the cervix into the uterine cavity, between the chorion and decidua, through into the amniotic cavity. The consensus of opinion is that pathogenic organisms normally are not found at the vault of the vagina, but they may be introduced through coitus. The infection may also be of hematogenous origin, the bacteria coming from the intestines, while an autogenous infection from a preexisting adnexal inflammation may be the cause.

The bacillus aerogenes capsulatus has been found with this condition, associated with which infection gas bubbles are formed in the amniotic cavity. (Tympanites uteri, or physometra.) The bacillus coli and the pyogenic cocci have also been found. Veteau(1) writes on this subject.

According to the researches of Hellendall(2) the infection argues unfavorably for both mother and child. The fetus may be born dead or suffers from respiratory and gastrointestinal disturbances or more rarely from infections of the skin, eyes, and navel; while the mother develops a puerperal infection with its usual results.

The second case I saw for the first time on September 19, 1910. The patient, twenty-one years of age, had had one child seventeen months before, a normal labor at term with an afebrile puerperium. She was now in her ninth lunar month of pregnancy. The fundus uteri, three fingers' breadth below the ensiform cartilage, the child in L. O. A., the fetal heart strong in the left lower quadrant. The patient's temperature was 103° and pulse 90, labor pains had started in about three hours before, but she had commenced feeling sick and though the temperature was not taken, had had fever the day previous. Shortly before my arrival, a vaginal examination had been made by a midwife, who had informed the patient she was not in labor and that she could not account for the fever. The pains were every five to

seven minutes and not hard. An internal examination showed the cervix to admit two fingers, was thick, the canal partially obliterated, the membranes intact, and a small head floating at the pelvic brim.

A specimen of urine was taken, which on examination later showed a heavy cloud of albumin, no casts or pus, and a physical examination gave me no clue as to the cause of the temperature. The patient acted ill, was restless and excitable.

At 9:30 P. M. the temperature was 102° and the pulse 90. An internal examination showed but little progress. An examination at 3 A. M. showed the cervical canal obliterated, dilated the width of three and a half fingers, and very soft, the membranes intact, and head partially engaged at the superior strait. The temperature was 90° and the pulse 98. The patient was tired, but still alert and very nervous. The pains were of poor character, occurring every five minutes. At 9:05 A. M. the pains were still every five minutes, but weak and of practically no value. The cervix was about as at last examination. The head slightly engaged. It seemed to be a cervix which would dilate easily and, to hasten labor, the membranes were ruptured artificially. With the next two pains, which were hard, the head came down so that it was visible just above the perineum, the thick anterior cervical lip over it. Further progress was apparently slow until 10 A. M. when with one hard pain the cervical lip retracted over the head and the child was allowed to be born slowly over the perineum. The child, a male, 44 cm. in length, weighed 2625 gm., cried immediately and, though one month premature, seemed in good condition. Twelve hours after its birth it had a hemorrhage from the nose for which no one was called, and it died.

The mother's temperature, after delivery, was normal. The next day, however, it was 103.8° , pulse 100. The uterus was rather tender. On the following day there was quite marked tenderness and muscular rigidity in the right iliac fossa, temperature 101° , pulse still 100. The lochia a little scanty, no odor. The following day the patient had a chill and the signs in the right side were more marked. Two days after this there was pain and tenderness on both sides and a definite mass on the right with a smaller mass on the left, the lochia rather scant and serous. The patient's temperature had dropped to normal, the pulse remaining around 90. She was removed to Mercy Hospital on September 26. Due to the moving, the temperature rose to 102° ,

but fell again to normal on the following day. The leukocytes were 19,900.

To make a long story short, a mass developed in each broad ligament about the size of a lemon. The pulse ranging from 80 to 96. Gradually under rest, ice-bag to the abdomen, later hot vaginal douches and ergot, the masses subsided without pus formation and on October 19 she left the hospital well.

The examinations made at the time of labor may have added fresh infection, and a deep tear in the cervix, resulting from rupture of the membranes, previous to complete dilatation, contributed to the formation of large masses in the broad ligament, but an infection was present previous to the patient's going into labor. Its mode of origin is the interesting part of this history. Here a preexisting pelvic inflammatory condition may have been the cause. Coitus had been indulged in some six to seven days before labor started and it is probable that the infection arose from the inoculation of pyogenic organisms at that time.

When the temperature during labor rises above 105.5° and the patient presents a septic appearance we should at once think of intrapartum infection, and institute procedures to hasten the evacuation of the uterus. Dilatation may be affected either by means of the rubber bag or manually, after which the delivery should be brought about by the most conservative method available.

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- 1405 GLENARM STREET.

PUERPERAL TUSSIS AND ITS TREATMENT.¹

BY

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This reflex or neurotic cough, though often referred to by the older writers, seems to have been dropped out of sight and mind by the authors of the past twenty years. Modern men have not recorded any such experience as Miguel who states in his treatise on "Convulsions in Labor" that there was an epidemic

¹ Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

of cough in 1675 that so powerfully affected pregnant females that most of them died. Columbat speaks of the cough and says "the violent shocks which it imparts to the abdominal viscera may cause uterine hemorrhages, abortion, sudden involuntary expulsion of the urine and by its prolongation determine pulmonary inflammation or it may increase in severity after labor has terminated, unlike the other complications of pregnancy." Leishman says "it is at times so violent as to resemble whooping-cough." The disease must be rare because of the great exertion involved in the cough paroxysms, the almost constant vomiting, the profound mental depression from loss of sleep, the pain and soreness from muscular strain, the inanition and the futility of all the usual remedies would surely make a symptom picture that would be indelibly impressed on the mind of the attendant. Particularly so if it ran its common course, and a vaginal discharge appeared with a color changing from pink to brownish-red, finally becoming bloody and thus indicating a separating placenta, the cough and the vomiting meanwhile remaining stationary or even increasing in violence until abortion was completed, or possibly continuing until the delivery of the uterus by the vulvovaginal prolapsus route; yet I can find no cases reported.

Primarily, "puerperal tussis" has no lesion, but it is accompanied, finally, by traumatism and damage to the pulmonary and respiratory tract and to various parts of the body. These are brought about by long continued and severe pneumatic hammering and the strain of constant coughing scarcely, if at all, less than that of whooping-cough which it resembles in many symptoms, the characteristic whoop being diagnostic by its presence or absence. I have seen umbilical hernia, inguinal hernia, prolapsus ani, prolapse of the uterus and bladder, gastrop-tosis, enteroptosis, and epistaxis caused by it and all these were complicated by constant vomiting of everything put into the stomach, inanition, starvation, and insomnia. The urine shows an irritated kidney, faint trace of albumin, crystals of uric acid and calcium oxalate, occasional blood globules, and few pus corpuscles. Occasional cylindroids and epithelia from convoluted tubules and pelvis of kidney and from the bladder.

In twenty-eight years I have seen three cases of puerperal tussis. The first one convinced me that the aid furnished by my library might be amply comprised in a quantity expressed by the symbol zero. Study and work and the exhibition of

this, that, and the other remedy had for their result the well-grounded and fixed belief that the patient might as well have been without treatment. Cough ceased after prolapse of the already emptied uterus, and with the rectum turned inside out. The patient recovered eventually after surgical aid and much nursing. In the second case I did better because I used the bath treatment referred to by Cazeaux and others. The results in the third case were all I could ask.

The diagnosis is readily made because exclusion is easy and the trouble can only be confounded with whooping-cough. The condition may be broadly described as a neurosis, probably of toxic origin, with lesions resulting from and following the traumas and strainings caused by its most prominent symptom, a spasmodic cough, essentially paroxysmal in character. In treatment the first thing is to forget all opiate formulæ. Dismiss all the usual cough mixtures from your mind. Morphine and heroin in minute doses ($1/100$ of a grain hourly) may be adjuvants but in ordinary medicinal amounts they seem to give rise only to the complications, stercoremia and hypostatic pneumonia. The first requisite of the sufferer is usually sleep. This is secured by twenty minutes in a warm bath in which washing soda and table salt have been dissolved in equal parts. Mix a cupful each of the sodium chloride and carbonate and add gradually to the water bath, stirring it a little and, when you taste the salts distinctly, the strength of the bath will be right. Not only that, but taste will be a good guide for the strength of future and succeeding baths, regardless of the quantity of water employed. Mild and general rubbing of the skin while in the bath is important, but anything like vigorous massage should be avoided. The temperature of the bath should be 95° gradually raised to the normal mark on your clinical thermometer or 98.6° . The duration should be twenty minutes and later, as the patient becomes accustomed to it and gains strength, the time may be lengthened to half an hour. After the bath the patient should be dried, but not rubbed, and the towel should be used as an absorbent—a blotter—but not as a means of friction.

In short, avoid everything stimulant and adopt everything conducive to quiescent nerves. A hypnotic (for example, veronal in 5 grain doses) as an adjuvant increases the sedative effect of the bath; it quiets the vomiting and prolongs the sleep. Give a hypnotic at say 7 P. M., the bath at 7:30,

and have the patient warm and in bed at 8 o'clock. The importance of definite orders to secure peace can hardly be overstated, for nothing annoys a nervous wreck (that is what my cases were) so much as stealthy movements, whisperings, and remarks to the effect that "she's asleep" or "she isn't asleep." The morning after the bath have the bowel irrigated with a quart of warm water in which is dissolved a heaping teaspoonful of Epsom salts and of table salt. Have the patient retain as much as she can of the solution, but do not insist on discomfort; make it easy for her because it is better to give three partial enemata daily and have all three comfortable than it is to give a single thorough and complete one with an exhausted and discouraged patient for its most obvious result. The magnesium sulphate may be increased to a heaping table-spoonful if a more cathartic effect is desired.

I think the best cough mixture for internal administration is the old formula: hydrarg. bichlor. gr. i, ammon. chlor. gr. x, syr. prun. virg. \mathfrak{z} iv, M. Sig. \mathfrak{z} i every four hours, if required. Alone, this and every cough mixture with which I am familiar will prove a vain hope and a poor help in time of much trouble, but it works very well with the other measures advised. It is possible that when first seen the sufferer may be too feeble to be put into the bath. In such an emergency use the cold-water poultice to the abdomen with the cold compress around the throat, and have her drink very hot water, as hot as she can swallow, by sipping from a teaspoon. In this way you can improve her condition sufficiently to enable her to undergo the bath without risk.

Electricity, galvanism, with the positive pole in the fossa under the left ear and the negative at the left side of the ensiform cartilage of the sternum, 5 milliamperes for ten or fifteen minutes and the same strength for thirty minutes with the positive to the forehead and the negative just below and inside of the angle of the left scapula, will act beautifully at times. It may be said of it that if it does any good it will do great good and if it does not do great good it is useless. The effect in my hands has been prompt, but if it were not quickly evident I would not persist in its use and should it make the patient nervous of course it will do harm. In other words, I believe it to be a great help, but I am not willing to go further at present. I can imagine a patient to whom it would be intolerable, though I have not seen any such person.

TREATMENT OF THE RETROFLEXED GRAVID
ADHERENT UTERUS WITH REPORT OF
TWO CASES.*

BY

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PREGNANCY in a retroflexed adherent uterus is an occurrence rarely observed, for the reason that in most such cases the cause of this condition is an infection followed by such changes in the tubes and ovaries that conception is no longer possible. Even should this function of the adnexa not be seriously enough disturbed to prevent impregnation, the fertilized ovum will rarely find a sufficiently healthy endometrium for normal development, and early abortion, therefore, will result. This no doubt explains why such few cases of this complication of pregnancy are reported. While in the retroflexed gravid uterus without adhesions nature will often come to the aid of the patient, so that spontaneous reposition and permanent relief may be obtained during the first two months, this can hardly be expected in a uterus bound down by adhesions, and here prompt surgical intervention is indicated. Manual assistance which is usually sufficient to replace the gravid uterus not complicated by adhesions will rarely if ever be of any avail. Two cases of this character have been observed by me which I consider of sufficient interest to place on record.

CASE I.—October 15, 1906, Mrs. T., age thirty, married over three years was referred to me by Dr. Kniffler. She had never been pregnant. She has not been well for over a year and complains of pains in the left side, especially when walking down hill. Menses have been regular, pained considerably first day, rather profuse lasting five or six days. Aside from this she has always enjoyed good health. She has been rather nervous. Her husband had gonorrhea four years ago. Examination showed the uterus retroflexed, but fairly movable. The left ovary and tube slightly enlarged, thickened, and adherent and very sensitive, right ovary seemed entirely normal. Under local and general treatment soreness in the pelvis gradually disappeared and later on an attempt to replace the uterus was made, but found impossible on account of adhesions. No further attempt at reposition, therefore, was made, especially

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as the manipulation caused a return of soreness in the pelvis which, however, promptly subsided.

Last menstrual period September 1, 1908. Examination in November showed the uterus much enlarged, still retroverted, the size of about six or seven weeks' pregnancy. She complained of much backache during the last two weeks, nausea, especially in the morning, and pains through the inguinal region, particularly on the left side. Attempt to replace the uterus failed. The above symptoms greatly increased during the next week or two with considerable dysuria, and she finally consented to go to Mercy Hospital for the purpose of trying reposition under anesthesia, or if that failed, to open the abdomen.

November 29, 1908, under anesthesia the uterus was found filling up the pelvis pretty completely, absolutely fixed and immovable. The abdomen was, therefore, opened and the fingers of the left hand passed down into the pelvis behind the uterus and firm bands of adhesions broken up. With considerable difficulty the uterus was finally brought up into the abdomen; it had the size of about two months and a half. The left ovary and tube were also found firmly adherent and the tube considerably enlarged and thickened. We contented ourselves with breaking up the adhesions. The right tube and ovary were perfectly normal. A modified Gilliam operation for shortening the round ligaments was then performed. The patient did very well until the third day when severe labor pains set in, followed after a time by profuse bleeding from the uterus with expulsion of the fetus and, later, the decidual tissues. The next morning I found some of the latter still partly attached to the uterine cavity, but had no difficulty in separating them with a finger in the uterus. After this her recovery was uninterrupted and complete. In May of this year she was delivered of a healthy child. Her labor was entirely normal and she enjoys excellent health. An examination made recently shows the uterus in perfectly normal position and the left ovary and tube practically normal.

CASE II.—July 17, 1910, I was called by Dr. Stewart, of Homestead, to see a Mrs. H. in consultation. She was forty-two years old; had one child, twenty years old. Had been married the second time for nine years, but had never been pregnant during the twenty years. Menses have always been regular, profuse, suffering much pain especially in both iliac regions. Her last period had been almost three months ago. For several weeks the patient had suffered very severe pains in right ovarian region. For five weeks she had vomited constantly, unable to retain even the slightest food or drink. About a month ago she states that she had several chills and also some elevation of temperature. Has lost much weight, and pulse is rather weak, varying from 90 to 110; bowels have been very constipated. On examination I found the abdomen considerably distended, with rigidity and tenderness over lower quadrant. Examination per vaginam

was rather unsatisfactory on account of extreme tenderness of the parts, but the whole pelvis was found filled up by a firm, elastic mass. The cervix was drawn up behind the symphysis so that it could scarcely be reached. She was taken at once to Mercy Hospital and on July 19 under anesthesia another examination was made which showed the tumor to be the pregnant retroflexed uterus filling up the whole pelvis in which it was firmly fixed. The abdomen was opened and the uterus and both ovaries were found firmly adherent. The uterus filled up the pelvis so completely that it was difficult to push the hand down between the fundus and the promontory of the sacrum. The uterus and ovaries were freed from their attachments and the fundus raised out of the pelvis with considerable difficulty. The abdomen was then closed with one silkworm suture and layers of catgut.

The operation had the most gratifying effect, as regards both pain and vomiting. The stomach which had been unable to retain anything for practically five weeks became retentive. Only on the third day, when a laxative was administered, did she vomit once. On the second day after the operation she expressed a desire to get something to eat. Her recovery was very prompt and complete and at no time did she have any symptoms or signs of threatened abortion. A week ago her physician, Dr. Stewart, informed me that her progress has been quite favorable since leaving the hospital.

In this second case I did not attempt the radical cure of the uterine displacement which I did in the first case, but confined myself to the separation of adhesions and reposition of the uterus. I am firmly convinced that the prompt abortion following the first operation was largely if not entirely due to the shortening of the round ligaments with its accompanying traction upon the uterine walls, and that, had this latter step of the operation been omitted, the fetus would probably have been saved. In this view I am confirmed by Küstner of Breslau, who in discussing this condition in *Centralblatt für Gynaekologie*, June 11, 1910, page 824, in connection with a case reported by Maiss, advocated prompt abdominal section, but advised against operation for the correction of the displacement, because of the danger of abortion and also because he does not believe that the operation, on account of the rapidly growing uterus and the consequent stretching of the attachments, would be followed by success. That the displacement was permanently cured by the operation of shortening of the round ligaments in my first case is probably due to the fact that the pregnancy was interrupted so promptly afterward. Had it gone on to term, the result might have been different.

In closing, therefore, this brief report of these two cases of pregnancy in the retroflexed adherent uterus coming under my observation I wish to emphasize two points in the treatment.

Prompt operation as soon as the diagnosis under anesthesia has been confirmed.

2. Separation of adhesions and reposition of uterus, but avoidance of all attempts at radical treatment or any other operative steps endangering the continuance of pregnancy. When operating before the end of the second month, the introduction of a pessary for a short period will prevent a return of the displacement without any danger to the fetus.

JENKINS BUILDING.

A METHOD OF TEACHING VAGINO-ABDOMINAL EXAMINATION.

BY

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ONE of the most important and difficult points in gynecologic instruction is to teach the student to distinguish the structures lying in the pelvis, by bimanual vaginal examination. Text-books indicate in general the method of introducing fingers, where to press down with the abdominal hand, etc., but they do not and can not teach the student how to feel the pelvic organs. Usually, in clinical work, cases are at first selected that are easy of examination, so as to develop gradually what we choose to call a "sense of touch." As a matter of fact, I believe the student has in most instances nearly as good a sense of touch as the teacher; his main trouble is not this, but rather that he can not properly interpret what he feels. He is told to examine a case, perhaps told what the findings are, and in all likelihood he will say he feels things as described, but neither he nor his instructor are by any means certain that he really feels them.

It is this uncertainty in our methods of instruction, that has lead me in recent years to adopt a somewhat different procedure I was often struck with the advantages of those methods of examination in which student and instructor feel an object at the same time. When for instance a sound in the bladder touches a stone, or the uterine curet scrapes down on hard tissue, the student grasping the instrument simultaneously with the operator, is certain just how such a condition feels. My object has been to apply this principle to gynecologic examination. Selecting preferably a patient with relaxed abdominal walls, I introduce the two fingers of my left hand into the vagina and lift the cervix upward toward the abdominal wall. Then taking one of

the student's hands in my other hand, I guide it to the fundus uteri, I can thus at the same time regulate the amount of abdominal pressure and also see to it that the muscles of the student's hand are sufficiently relaxed. I find that with such assistance the student will be able to outline clearly the shape and consistency of the object palpated. I next allow the student to palpate with the abdominal hand unassisted, while I still hold up the various pelvic structures with my fingers in the vagina. Students ordinarily have the greatest difficulty in palpating the normal ovary. By this method of joint bimanual palpation with the student, both he and I can feel the ovary slip between our fingers and be certain that he has really felt this organ. In a similar way tube and round ligament are distinguished in women with lax abdominal walls.

Now I allow the student to begin vaginal palpation. Again I try to emphasize the pre-eminent necessity for muscular relaxation. Examinations are gentler and the tactile sense improved, if there is the same muscular limberness on examination as in playing a musical instrument. Where the vaginal outlet is sufficiently large, I prefer at first to have the student introduce one finger alongside of my finger in the vagina and make out such points as differentiated by mere vaginal examination. Now the student is ready to make a bimanual examination for himself. Unless taught otherwise, he is apt to do this in an awkward, stiff manner, putting muscles on a strain. Pressure of the vaginal fingers on the perineum is rarely properly done, so that the student complains that "his fingers are too short." A little special attention to limbering up the tendinous connection between the middle and ring fingers will do much to facilitate internal exploration of the pelvis.

A plan of examination that will not permit of any structures being overlooked is to divide bimanual palpation of the pelvis into that of the middle third and that of the two lateral thirds. In the middle portion we practically always find the uterus, and to this, special attention is now directed. To describe it completely the student is asked to specify, as in Crossen's Text-book of Gynecology, its "position, size, shape, consistency, tenderness and mobility." Practically all physical characteristics can be included under these heads. Now the two lateral thirds of the pelvis are explored and all structures lying therein allowed to pass between the hands from behind, forward. Tubes and ovaries are the most important organs here, but sacro-uterine ligaments,

ureters and pelvic cellular tissue are reviewed at the same time for abnormalities. Again I require a detailed description of the various structures in accordance with the six above mentioned characteristics (position, size, etc). I find that usually after such a systematic exploration of the pelvis, the student is in a position to make a fairly accurate diagnosis.

The essentials for accurate bimanual examination are therefore

1. A knowledge of how the normal organs feel and where they lie in the pelvis.
2. Muscular relaxation of patient *and physician*.
3. Gentle manipulations.
4. Systematic exploration.

As a preliminary to gynecologic examinations by the student alone, there should be *joint bimanual examinations by teacher and student*.

731 METROPOLITAN BUILDING.

A CASE OF COMPLETE INVERSION OF THE UTERUS OF FOURTEEN YEARS STANDING.*

BY

STEPHEN E. TRACY, M. D.,
Gynecologist to the Stetson Hospital,
Philadelphia.

THE comparative infrequency of this condition, and the great lapse of time between the accident and the discovery thereof, make this case of sufficient interest to warrant a report. This case is another illustration of the vicious practice of allowing midwives to attend women in confinement.

Mrs. J., æt. fifty-three, widow, VIII-para. Miscarriages one.

Previous History.—Usual diseases of childhood, and pneumonia when twenty years of age.

Menstrual History.—Menstruation began at the age of sixteen years; the periods were regular and never painful. Menstruation returned one year after last confinement and continued normally during the next ten years. The four years prior to operation she bled almost constantly and at times had profuse hemorrhages.

The confinements were easy, she was never attended by a physician, and enjoyed good health until after the last delivery. The last confinement, fourteen years before coming under observa-

*Read before the Philadelphia Obstetrical Society, November 3, 1910.

tion, was difficult, and after being in labor forty-eight hours, the patient gave birth to a child which weighed 10 pounds. In this confinement she was attended by a midwife. After the delivery the patient was so weak and exhausted that she did not know what happened, but understood there was trouble in delivering the placenta. The patient remained in bed four weeks, and the bleeding continued two months. During the next ten years she suffered with a sensation of fullness in the vagina, of pressure about the rectum, and of slight pain during defecation. Four years before being subjected to operation, a lump protruded through the vulva which she replaced. From then on she bled almost continuously. The protruding part gradually pushed its way down, the discomfort in the pelvis increased, and she developed severe pain, which extended down the right leg and forced her to remain in bed. At that time, six weeks before being admitted to the hospital, she consulted a physician, who discovered a mass in the vagina, made a diagnosis of submucous fibroid, and recommended an operation.

The patient was admitted to my service at the Stetson Hospital on June 11, 1910, for my senior assistant, Dr. Thomas E. Jones. Bimanual examination revealed a freely movable tumor in the vagina, which protruded through the vulva when the patient was requested to bear down; neither uterus nor appendages could be felt above the mass. A diagnosis was made of complete inversion of the uterus.

As the patient was advanced in years, the organ of no use and reduction impossible, a vaginal hysterectomy was performed. The infundibulopelvic and round ligaments were sutured to the angles of the vagina, and the wound was closed except for a small opening through which a strip of gauze was inserted.

The patient made a prompt and uneventful convalescence.

Section of the uterus revealed an intramural fibroid situated in the fundus of the organ. Histological examination showed the endometrium to be entirely destroyed.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of December 13, 1910.

The President, J. LEE MORRILL, M. D. in the Chair.

DR. S. M. BRICKNER reported the following cases:

PERFORATION OF EXTRAUTERINE PREGNANCY IN THE RECTUM;
FOREIGN BODY IN RECTUM; PROFUSE RECTAL HEMOR-
RAGE; TRANSFUSION; OPERATION; RECOVERY.

This case is reported because of its rarity, the baffling difficulty of making a preoperative diagnosis and some of the misleading factors in the physical findings.

B. D., twenty-three years old, was admitted to the first gynecological service of Mt. Sinai Hospital on April 8, 1910. Her family and personal histories were negative. Her menstrual life began at sixteen. Her periods were of the four-weekly type lasting for four or five days. Her last regular period was two months ago. Previous to that she had had a lactation amenorrhea for five months. She was married eighteen months and had had one child eight months ago. Three months before admission she had been treated for cholelithiasis.

Ten days before admission, when four weeks overdue, she began to have pain in the lower right quadrant of the abdomen. On the following day, thinking she was pregnant, she inserted a bougie into the uterus. Her pain increased in severity, and the next day she began to bleed. The pain and the bleeding continued up to the time of admission.

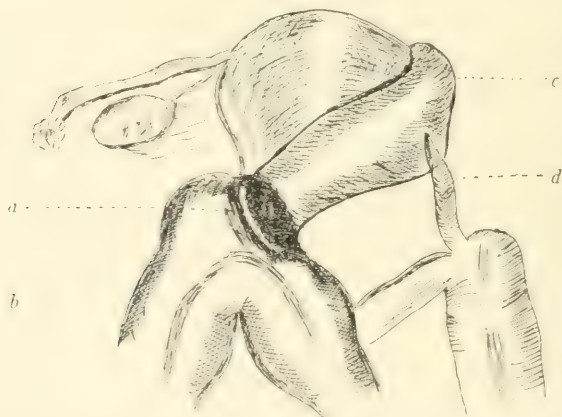
The physical examination showed an area of tenderness in the right iliac fossa, with some rigidity of the abdominal wall. There was moderate bleeding from an enlarged uterus which was anteverted. Its lateral mobility was inhibited by an exudation infiltrating the right sacroiliac ligament. The exudate was confined to the right fornix and was directed from the pelvic wall upward. The mass was distinctly tender.

There was a temperature of 101, which fluctuated between 99 and 101 for a week, the pulse ranging from 88 to 100. The blood count showed 16,000 leukocytes, with 86 per cent. polynuclears. There were 9 per cent. of small lymphocytes and 6 per cent. of large. The blood count and the sensitive mass led us to the diagnosis of a pelvic exudate probably due to the efforts at induction of abortion which the patient had made.

Four days after admission she was again examined because the uterine bleeding had not ceased. The exudate then filled the

entire sac of Douglas and the entire right side of the pelvis. The cervix was open and the uterus was very gently curetted with a blunt curet. Small pieces of ovum were removed which were apparently free in the uterine cavity. The patient was now placed upon hot air treatment, her temperature having fallen to 99. On the twenty-first, the exudate appeared larger and was confined entirely to the right side of the pelvis. On the twenty-fourth, eighteen days after admission the patient had a bloody stool. A microscopic examination of the stool showed neither parasites nor tubercle bacilli. A proctoscopic examination made on the same day by Dr. Wilensky, the house-surgeon, disclosed a fish bone sticking into the mucous membrane of the rectum. This was removed with ease.

There was a continuation of the vaginal and the rectal bleeding



Diagrammatic sketch after removal of posterior layer of peritoneum. *a*, entrance of extrauterine sac into rectum. *b*, rectum. *c*, right tube and broad ligament enclosing hematocele. *d*, adherent appendix

for the next six days when the patient begged to be allowed to go home. Her hemoglobin at this time was 40 per cent. Her temperature had been normal for two weeks and she was advised to keep herself under observation at the dispensary. She was discharged on April 30. For the next ten days she visited Dr. Frank at the dispensary, and he then returned her to the hospital. For a week after leaving the hospital she bled constantly from the rectum. This ceased for a few days, but the day before admission she began passing a large amount of fresh blood and some clots. With each passage of blood from the rectum she had severe cramps in the lower part of the abdomen. There was also a sharp shooting pain in the right iliac region. She has spotted intermittently ever since leaving the hospital (eleven days). Although she is very weak she has not fainted.

Physical examination showed a softened cervix which was closed. The uterus was anterior and was slightly drawn to the right. The left appendages were not palpable. In the right broad ligament there was a soft elastic mass the size of an orange with very marked pulsation at its base. Rectal examination showed the mass on the right side to be very near the rectal wall. The proctoscope showed no rectal lesion, but about three cups of dark brown blood were obtained. At this time the diagnosis of a probable extrauterine pregnancy was made, but the rectal condition was not clear. Dr. Frank and I thought that the rectal bleeding might be due to the proximity of the extrauterine pregnancy to the rectum. I decided to postpone operation for a few days to see if the patient's condition might improve, her hemoglobin being only 40 per cent. After waiting a week, we were disappointed to find that she steadily grew worse, her hemoglobin dropping steadily until it reached 20 per cent. It was evident that something had to be done if the patient's life was to be saved. With few exceptions, she passed blood by rectum daily, sometimes in large amounts. Her appearance and general condition became steadily worse. On May 20, she was transfused by Dr. Frank with the Elsberg cannula, her hemoglobin rising during the operation from 20 to 60 per cent. On the following day I operated.

A median abdominal incision was made for a length of 4 1/2 inches. A little free fluid was found in the peritoneal cavity. The mass was found to lie deep in the pelvis between the cervix and the rectum and beneath the peritoneum of the culdesac. It involved also the entire right broad ligament in which the right tube was lost, being curled behind the uterus and losing itself in the broad ligament. The appendix, very long and very much thickened, ran vertically downward and was attached to the posterior wall of the mass. The peritoneum over the sigmoid was incised, the appendix was removed, and a typical supravaginal hysterectomy was performed. After this had been accomplished it was seen that the mass would have to be removed separately. It was peeled out from its bed in the pelvis and was found to involve the entire wall of the rectum down to and including the mucosa. Thus, to remove mass completely, the rectal wall for about 4 inches had to be cut away. The rectal opening was closed by through-and-through sutures of chromic gut, by inverting sutures of Pagensstecher thread and by sewing the peritoneum of the broad ligament over the suture line. The pelvis was drained by gauze passed through the cervix which was split for the purpose. The pelvis was then shut off by closing the anterior and posterior layers of peritoneum and a packing and dam of rubber were placed down to the suture line and brought out at the lower angle of the wound.

The specimen showed a uterus of normal size somewhat rough on its interior. The left appendages were normal. The right

tube was much thickened and its end was closed. The tumor mass was of the size of a goose egg. On section it was seen to be composed of blood clot and fibrous tissue. Microscopical examination by Dr. Mandlebaum showed the decidua and chorion of ectopic pregnancy.

The patient stood the operation remarkably well. The wound, however, did not heal primarily. On the fourth day after operation, a fecal discharge was noticed in the abdominal wound and three days after this a small quantity of feces was discharged from the vagina. The fecal discharge became less and less under daily dressing and drainage and the patient's general condition also improved steadily. There was no further bleeding from the rectum and the hemoglobin steadily rose until one month after the operation it registered 64 per cent. The patient was discharged on June 26, thirty-five days after the operation, with a small abdominal sinus which closed in a few weeks.

SUMMARY.

We had a patient who, believing herself pregnant, attempted an abortion on herself. She came to us with a temperature, apparently an exudate in the pelvis, and finally a hemorrhage from the rectum. This was explained, apparently, by the finding of a fish bone in the rectum and the patient was discharged after two weeks of normal temperature with some rectal bleeding still going on and with a mass in the right part of the pelvis.

Her desperate condition on her return to the hospital made an operation imperative. We then found that there was no exudate, but that the mass on the right side of the pelvis had been an extrauterine pregnancy which had burrowed into the right broad ligament and had attached itself to the rectum. A painstaking search by Dr. Mandlebaum failed to reveal any chorionic villi in the rectal wall; but as the entire mass was one there is no question that the bleeding from the rectum represented the burrowing through of the ectopic mass into the rectal wall. The case illustrates well the great difficulty of making a positive diagnosis in unusual forms of extrauterine pregnancy.

DR. J. CLIFTON EDGAR presented the history of a case of

TRAUMATIC FRACTURE OF THE PELVIS, RESULTING IN ABSOLUTE CONTRACTION, WITH SKIAGRAPH OF THE PELVIS.

Mrs. A., unmarried, age twenty-eight, was, in August of 1906, driving with a companion in a light runabout type of carriage. Toward evening on passing over a grade crossing the wagon was struck by a special train traveling at a considerable rate of speed. The companion of Mrs. A., being on the side of the carriage first struck by the locomotive, was instantly killed. Mrs. A., by reason of the concussion, was thrown some distance into the air and, fortunately, in her descent landed on top of a mound of hay.

In addition to numerous superficial bruises she sustained a fracture of the right femur for which she spent several weeks in a hospital. The diagnosis of a fractured pelvis was not at this time made. Subsequently attention being directed to the pelvis, a skiagraph was made, which revealed first a fracture through the horizontal ramus of the right pubis about halfway between the spine of the pubis and the acetabulum and opening into the obturator foramen. A second fracture, as is shown in the radiograph, begins at a point on the posterior portion of the crest of the ilium about $3\frac{1}{2}$ cm. anterior to the upper termination of the superior curved line and ending in the upper portion of the great sciatic notch.

These two fractures resulted in a deformity of the pelvis, partially resembling the oval or single oblique pelvis first described by Naegele in 1806, and due to failure of development of one ala of the sacrum, but more closely resembling the coxalgic pelvis due to hip-joint disease. Mrs. A. subsequently married and was seen by the writer in November of the present year, she being then sixteen weeks pregnant. External pelvimetry readily revealed a difference in the two oblique diameters, the right oblique being 3 cm. less than the left. In the internal examination the asymmetry of the pelvis was easily recognized, and an examination under ether showed a transverse diameter of the pelvis of not over $7\frac{1}{2}$ cm.

A shortening of the right leg was present which was corrected by a shoe with raised heel and sole.

This pelvis falling in the class of absolute contraction, Mrs. A. was offered Cesarean section at term or induction of abortion at the sixteenth week. She elected the latter, which, I understand, was performed by her family physician.

This case is presented to the society by reason of the extreme rarity of pelvic deformity due to fracture of the pelvis, the reason of their infrequency being that nearly all cases of serious pelvic fracture end fatally. Out of 13,200 fractures from the statistics of nine hospitals in England and America, only 8/9 of 1 per cent. were fractures of the pelvis (Hirst).

The resulting deformity may be of various forms, depending on the nature and seat of the fracture. The contraction of the pelvis is almost invariably found on the side of the fracture, as in the case here presented.

If the horizontal pubic ramus is broken, as in the case cited, it is impossible to keep the broken ends together during repair and thus great deformity may result.

DR. CLARENCE P. HYDE presented the record of a case of

CHRONIC VULVOVAGINAL ABSCESS CURED BY INJECTIONS
OF ANTIGONOCOCCIC VACCINE.

MRS. G. aged thirty-two, shortly after her marriage ten years ago, was infected with gonorrhea, her husband innocently supposing himself cured of an antenuptial Neisser infection. From

being a healthy girl who had never had one sick day she developed into a chronic invalid, suffering with constant pain in the left ovarian region, backaches, marked dysmenorrhea, and repeated attacks of vulvovaginal abscesses, which necessitated frequent incision. Four years after her marriage she had an operation for the relief of these abscesses, at which time the infected site was freely opened curetted, cauterized, packed, and allowed to heal by granulation. Until June, 1909, five years after this procedure, there was no recurrence of the abscesses, although the other symptoms remained, in spite of local treatments. Then from June, 1909, until June, 1910, when I first saw her, an abscess appeared at every menstrual period, and at no other time. It was always in the same labium and in the same place. On examination, inspection showed the vulvar outlet of a nullipara, the left labium much swollen, greatly indurated, tender on touch, and discolored, uterus in position, slightly fixed and drawn to the left, and undoubted left adnexal disease. I advised complete excision of the infected abscess area, but she would not consent to another operation. During her menstrual periods in July and August, I opened another abscess in the same location. In September, while on her vacation in the woods, the abscess again developed during her period; and, as she could not obtain the services of a physician, she was compelled to bear the pain until it ruptured. During her October period, I again opened the abscess. She was now in a most melancholic condition and frequently spoke of suicide. She could do no household work, was in bed most of the time, and a constant sufferer. When the abscess was last incised, some of the pus was sent to the Hoaglands Laboratory, and Dr. Murray reporting the presence of gonococci. A few days later, antigonococcic vaccine was injected, this being three weeks before her next period. The P. and D. stock preparation was selected, 20,000,000 bacteria in each c.c.

On November 4, after careful sterilization of the site of puncture, and with a sterile syringe and needle, 5,000,000 bacteria were injected into the abdominal wall above the pubes, the usual site for these injections. There was only a slight reaction, consisting of a few chills, slight rise of temperature marked anorexia, no pain, no discharge and no change in the old indurated tissue in the labium.

November 14, 10,000,000 bacteria were injected, the number being increased because of the previous slight reaction. A very marked reaction occurred—numerous severe chills, high temperature, considerable abdominal pain, backaches, and violent and increasing attacks of nausea. This continued for five days, when the patient resumed her normal condition. During these five days, the induration in the labium disappeared, and for the first time since her initial attack ten years ago, the left labium resembled the right in color, size, and density. The patient herself volunteered this information before I confirmed it. One unusual fact was noticed and that was the appearance of an excess-

ive amount of vaginal discharge, the patient wondering where it all came from, as she rarely had any leucorrhea, and when present, it was so slight in amount as not to disturb her by its presence.

November 21, 5,000,000 more were injected, followed by a slight reaction only, little nausea, but a large discharge of mucus from the vagina.

Three days later, the patient walked into my office, simply to say that she was feeling very well, had taken up her household work, and that her mental depression was disappearing. At this time, she personally suggested another vaccination.

November 28, 5,000,000 bacteria injected. On this date she feels exceptionally well, her melancholia has all disappeared. She stated that she had just passed through the easiest menstrual period since her marriage, in that there was almost no dysmenorrhea. For the first time, also, no abscess appeared, although she felt as though one might. I may here state that it did not. Next day she went to the country where she now is, and has since written that her condition is excellent and that she is enjoying life.

The case has been interesting to me because of the result accomplished by the vaccine in the face of her determined opposition to an operation. There can be noted the disappearance of the recurring abscess and her dysmenorrhea; the complete softening and change in the indurated left labium where the abscess always appeared; the large amount of mucus and muco-pus discharged after each vaccination; the improvement of her mental state; and, one fact not previously spoken of, the entire absence of pain in the left ovarian region, which before was constant and increased on locomotion.

The appearance of the abscess at each menstrual period may be due to the fact that all vaginal organisms are greatly increased in numbers at this time, as shown by Stroganoff, and therefore, in presence of the swelling and congestion of the tissues at this time, the chances of reinfection are increased.

The presence of the melancholia is attributed to the theory that the gonorrheal toxins elaborated every month with each abscess were responsible, a fact noted by genitourinary specialists.

It is my intention to further follow up the progress of this case on her return, when a vaginal examination will be made to determine the adnexal condition, and a smear taken from a twenty-four-hours tampon to demonstrate the presence or absence of gonococci. Future periods will be watched with a view to note the recurrence or permanent absence of the abscess, and the presence or not of the dysmenorrhea.

DISCUSSION.

DR. BRAUN.—Dr. Brickner's case was interesting to me. I did not hear his entire report, but gathered that it was an instance

of the infection of the products of a ruptured extrauterine, which after the infection acted as any intraabdominal inflammatory mass, involving the adjacent structures even to the point of perforation. Within the past ten days I saw a patient in consultation who gave a typical extrauterine history. She, however, had a temperature of 102° with pulse of 120, which had continued for the week previous to my seeing her. The examination gave an abdominal mass, extending upon the left above the umbilicus and only intrapelvic on the right, by the vaginal. While the pelvis was filled with the exudative mass, what appeared to be a distinct distended tube could be palpated back of the uterus.

She was removed to the Woman's Hospital and kept under observation for four days. The temperature remained practically the same as when first seen. The blood count two days after admission was 15,000 leukocyte with 78 per cent. polynuclear.

Two days later the leukocytes had increased to 22,000 and polynuclear 82 per cent. The vaginal condition was much changed, the mass posterior to the uterus bulging into the vagina. The operation was done at once, the culdesac was opened, with the liberation of free blood and old clots. Active bleeding did not cease. Though the opening of the culdesac and wiping out of the clots consumed only a short time, the patient was rapidly becoming exhausted. To check the continued free bleeding, the abdomen was rapidly opened and the ruptured bleeding tube tied off.

Vaginal drainage gauze was introduced and after an intravenous infusion of salt solution the patient improved. She has done well with the exception of the temperature which has remained practically the same as when first seen before entering the hospital.

The case is one of infection of the blood clot, supposedly by the colon bacillus since she absolutely denies any attempted interference. I regret that at the time of the operation a culture was not made. There was no pus present. The necessity of rapid work caused me to overlook the taking of the culture. There was no free blood in the peritoneal cavity; peritoneal adhesions surrounded it. The change in the vaginal picture was the counterpart of an advancing tubo-ovarian abscess, finding its exit through the vagina or into the rectum.

Since reporting this case the temperature has remained at practically the same elevation. Vaginal examination gave no clue to the cause; in fact, showed a satisfactory condition.

The patient's abdominal wall was thick, no evidence of wound infection was to be determined by deep pressure. The wound was, however, as found on the seventh day and an abscess lying over the intestines was evacuated. A culture gave a pure colon bacillus.

The origin of the abscess was evidently an infected blood clot not removed at the time of the rapid opening of the ab-

domen. The surmise that the original infection was due to the colon bacillus was correct.

DR. VINEBERG.—Dr. Brickner's case opens up an interesting point, that is, as to the probability of chorionic villi attacking the peritoneal covering of the intestine and penetrating the wall of the intestine, thereby causing hemorrhage. The case I reported a year or so ago was one in which, at the time, it seemed to me that the data of the case would point to such a conclusion. The case I reported I think Dr. Brickner will remember. In Dr. Brickner's case we had an ectopic bleeding which became diffused in the base of the broad ligament and was carried down by gravitation into the culdesac, and that might perforate through the bowel without the chorionic villi acting as a perforating agent. The case I reported was of great interest in so far that the pregnancy had occurred in the stump of a tube which had been removed for pyosalpinx some months before. The woman came to me with a history of profuse hemorrhages for the previous six or seven weeks, during which time she had six or seven attacks of hemorrhage, large quantities of blood coming from the rectum. On examination there was a mass on the left side. The only conclusion I could come to was it was probable the operator had left a foreign body in the abdomen and this had lacerated in the bowel. On operation, to my surprise, I found a bluish mass about the size of a turkey's egg, and part of this mass was formed by the sigmoid flexure and the stump of the tube that had been left behind and that formed the mass. I removed it and it proved to be an ectopic sac. On examination of the bowel wall I could see no perforation and did not feel justified in removing a portion of the bowel for microscopical examination. It seemed to me at that time it was pretty evident that the chorionic villi had eaten through the tissues and set up hemorrhages.

DR. PINKHAM.—I would like to ask what the indication was for doing a supravaginal hysterectomy in view of the patient's condition.

DR. BRICKNER.—It was absolutely impossible to attack the mass until the uterus had been removed. I would like to add only that the search for chorionic villi was made with the knowledge that certain histologists deny the possibility of chorionic villi eating their way through peritoneum. I am not at all competent to judge whether the hemorrhage from the rectum was due to the actual perforation of the tubal sac, or was rather from the hemocele at the base of the broad ligament into the rectum, or whether chorionic villi had been deposited upon the surface of the rectum and had reached the mucous membrane. Dr. Brettau, Dr. Frank and I, were utterly at sea; we were absolutely wrong, in fact, during the patient's first visit to the hospital, and you can readily understand that we were somewhat misled by the attempted abortion and by the fact that we had removed a fishbone from the rectum.

DR. WARD.—I would like to ask whether there was any pos-

sibility of that fishbone having become imbedded in the wall of the rectum and catching on the ectopic mass.

DR. BRICKNER.—No, I hardly think so. As a matter of fact, there was no abscess and there was no temperature at any time.

DR. WARD.—The fishbone was imbedded in the rectum?

DR. BRICKNER.—It was sticking there. The possibility has suggested itself that there might have been a nonpurulent exudate that became attached to the ectopic mass, but it was evidently not so, because the bleeding from the rectum continued in tremendous amounts weeks after the fishbone had been removed.

(To be Continued.)

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

*Twenty-Third Annual Session, Held at Nashville,
Tennessee, December 13, 14, and 15, 1910.*

*The President, W. O. ROBERTS, M. D., of Louisville,
Kentucky, in the Chair.*

CHRONIC URETHRITIS AND CHRONIC URETERITIS CAUSED BY TONSILLITIS.

DR. GUY L. HUNNER, of Baltimore, Maryland, contended that certain cases of chronic urethritis and chronic ureteritis heretofore of obscure origin were due to tonsillitis. He recognized that the great majority of chronic urethritis cases were due to gonorrhea, most of the cases of rheumatic urethritis of the older text-books being of this nature. Some cases could be traced to trauma and infection in childhood, or trauma and infection of nongonorrheal character in the newly married. Other cases might possibly be due to onanism, and some might be classed as autoinfections, the short female urethra and the myriads of microorganisms normally present in the outer orifice being factors that would make autoinfection probable.

After ruling out gonorrhea and these rarer causes of infection, there still remained a certain large percentage of chronic urethritis cases which, in recent years, he had associated with the rheumatic diathesis. He asserted that in a large proportion of this class of cases the disease was due to infections or toxins from the tonsils, and the importance of this observation was appreciated only when we recognize that the urethritis could not be permanently cured until the tonsils were thoroughly extirpated. To substantiate his views, four cases who had had the tonsil operation were reviewed in detail, and several others not operated were cited briefly. Of the four operative cases, two had been treated for

months without appreciable permanent benefit to the urethra, whereas after the removal of the tonsils, Case I recovered. The recovery was prompt and the patient had been well for fourteen months, after having had bladder trouble eight years. Case II, after removal of the tonsils, had an irritable spot in the base of the right fauces, which for seven months gave periods of sore throat, accompanied by rheumatic symptoms in the knees and urethritis symptoms. For the part four months the throat symptoms had been absent, and the joints and urethra were apparently well. Case III had been treated in the hospital on two occasions in the past nine years with prompt recovery from the urethral symptoms each time. On the last hospital visit in March, 1910, the tonsils were clipped with the tonsillotome, and the patient reported a return of all her symptoms soon after going home. Case IV had a tonsillectomy after two urethral treatments, so no conclusions could be drawn in her case as to the futility of urethral treatments without removal of the tonsils. She had apparently recovered after having had bladder trouble three years, although only four months had elapsed since the tonsillectomy. The various possible causes of urethral stricture were discussed and two cases were reported to illustrate the possible causal relationship of tonsillitis.

The fact that acute prostatic abscess sometimes followed inflammation of the tonsils suggested a possible relationship between the tonsils and certain chronic urethritis cases in males. These cases were often associated with chronic prostatitis, in which gonorrhea could be excluded as the cause, and for which no definite etiology had heretofore been obtainable.

DISCUSSION.

DR. J. M. MASON, of Birmingham, Alabama, said it seemed to him that all of the cases reported had occurred in unmarried women in whom there was some possibility of nervous disturbance or reflex irritation of the urethra. He asked Dr. Hunner whether he had had any cases in married women or in women whose sexual relations were normal.

DR. G. R. HOLDEN, of Jacksonville, Florida, asked whether the discharge in these cases contained pus cells as seen by the microscope.

DR. HOWARD A. KELLY, of Baltimore, stated that the wife of a professional colleague had been under his care for fifteen years. She had had more or less malaise. Careful examination revealed pus in the urine in varying amounts, but so far as the local conditions were concerned the patient was without symptoms. She was in ill health. He catheterized and found pus came from the left kidney. He dilated the ureter on that side, washed out the kidney; she got better, but after a few months returned for further investigation and treatment. She had for twelve years been troubled with rheumatism. She had enlargements of the joints.

Last spring, in examining her, he found a large, tender kidney, with a good deal of pus in the urine. He drained this kidney, and did a plastic on the semilunar ureteral valves. He cut down on the fascia at the end of the ureter and drained from the side. She continued to suffer with rheumatism through the summer, although she experienced some relief from the drainage in the side. This fall he took out the kidney, and her rheumatism disappeared like magic.

DR. JOHN F. OECHSNER, of New Orleans, said it seemed to him from the cases cited, without going into any other possible local infection, that the tonsils were at fault. He feared, however, that what had been said might lead to more or less universal tonsillectomy if the members of this representative body should regard the tonsils as always at fault in cases of urethritis, where the specific organism, the gonococcus more particularly, could not be determined. He, therefore, made a plea to educate the practitioner to be more specific in determining the nature of a local infection, whatever it may be, and find out exactly where the focus of infection was.

DR. HUNNER, in closing, said that some of the cases he had had since the four he had reported were married women. These cases did not have pus in the urine. One could not milk any pus out of the urethra as he could in an acute gonorrheal case.

THE BEST METHOD OF EXPOSING THE BLADDER FOR AGGRESSIVE OPERATIONS BY THE SUPRAPUBIC ROUTE.

DR. HOWARD. A. KELLY, of Baltimore, pointed out the disadvantages of the method in common use, namely, of making a vertical midline incision between the recti muscles, when the muscles with their underlying fascia resist retraction and so offered only a slit through which the bladder could with difficulty be exposed. Dr. Kelly used a transverse crescentic incision above the pubis through skin, fascia, out to or even beyond the semilunar line on each side. He then separated the fascia from the muscles after the manner proposed by Pfannenstiel for operations upon abdominal and pelvic tumors. In bladder cases, however, the abdominal cavity was not opened. The recti muscles freed from their overlying fascia were flaccid and easily drawn apart, thus affording a very broad exposure to Retzius' space. The bladder was clearly brought into view by inflation with air pumped in through the urethra and was widely incised in its transverse axis, thus affording a maximum exposure of the viscus. With the bladder thus conveniently opened, all parts of the organ were perfectly exposed to view and made easily accessible to operation. The whole question of dealing with extensive ulcers, papillomata, malignant disease, and cystitis requiring resection was by this means greatly simplified. Further help in bringing the base of the bladder up within reach might be secured by introducing two fingers into the vagina in women and pushing the anterior wall upward.

At the conclusion of the operation, the bladder was closed with fine silk or catgut sutures, the investing fascia was also carefully united with catgut or silk, and the rest of the abdominal wound closed, in suitable cases leaving a small drain extending down to or into the bladder. By this operation a maximum exposure and accessibility of the bladder without injury to the important underlying structures was gained without a risk of subsequent hernia.

DISCUSSION.

DR. J. SHELTON HORSLEY, of Richmond, Virginia, said that for more than a year he had been using the Pfannensteil incision as a routine measure in all suprapubic cystotomies, and he found it took very little more than the ordinary incision and it left the abdominal wall in a much better condition afterward.

DR. ERNST JONAS, of St. Louis, Missouri, said the Pfannensteil incision gave a very good view of the bladder. This incision had been advocated by Dr. Pfannensteil for clean gynecological cases where there was no pus in the pelvis, and not for cases in which the pelvis was badly infected.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, stated that the Pfannensteil incision was only suitable for clean cases. He had had a large experience with the transverse incision for shortening the round ligaments and for operations on the bladder, and if the wound should suppurate the objection raised by Dr. Jonas held good. While the technic demonstrated by Dr. Kelly was fine for clean cases, he could see objection to its use in suppurative cases.

DR. GEO. H. NOBLE, of Atlanta, Georgia, had made use of the transverse or Pfannensteil incision quite frequently in cases in which he did not expect to encounter a septic process, both in placing the uterus in its normal position and in opening the bladder. A point he wanted to bring out especially was that in this dissection one could increase the opening very materially and satisfactorily by making a section of the lower ends of the recti muscles, where necessary, and get a good view. This was particularly the case where one wanted to open the pelvis to go into the peritoneum, using this incision.

DR. ALEXANDER HUGH FERGUSON, of Chicago, could see how this method of exposing the inside of the bladder would be of great usefulness to those surgeons who practised suprapubic prostatectomy; also in removing papillomata in avoiding the ureter. It must be remembered that there was no fascia behind the rectus muscle in this region, and that it retracted easily and acted as a bar to infection in the operative area.

CESAREAN SECTION WITH SPECIAL REFERENCE TO THE TIME OF OPERATION AND ITS TECHNIC.

DR. LEWIS S. MCMURTRY, of Louisville, Kentucky, stated that this operation should be performed with the same deliberate care

and expedition as were observed in other abdominal operations. There seemed to be a general impression on the part of surgeons that exceptional rapidity bordering on haste should characterize the steps of the operation. There was no valid reason for this. Davis (Asa B., of New York) made the abdominal incision above the umbilicus, and the uterine incision just below the fundus of that organ. The speaker did not believe the site of the incision was of essential importance. The abdominal wall at the full term of pregnancy was thin and relaxed easily. As soon as the abdominal incision was made and the uterus exposed, long gauze pads wrung out of warm salt solution were placed within the abdomen to hold back the omentum and intestines and protect peritoneal surfaces while the uterus was being emptied and closed.

With the demonstrated results of Cesarean section, as now obtained, the scope of the operation must necessarily be widened and its application greatly extended. What was most needed at the present time was an active interest on the part of all abdominal surgeons, and such a campaign of education as was successfully applied some years since in behalf of early operation in other conditions requiring prompt surgical intervention. It was established that the primary Cesarean operation in skilled hands had a mortality quite as low as uncomplicated ovariectomy and clean hysteromyomectomy. With repeated examinations, cervical dilatation and application of forceps, carried out with crude and desultory observance of aseptic precautions, the mortality of abdominal hysterotomy was unnecessarily increased. The cooperation of the surgeon and the general practitioner was necessary to correct this fatal error.

DISCUSSION.

DR. E. GUSTAV ZINKE, of Cincinnati, Ohio, stated that if the mortality of Cesarean section to-day was too high, it was because of carelessness or indifference on the part of those who took obstetric cases and did not give them the attention they deserved. When a woman engaged the services of a physician with a view to attending her in her approaching confinement, the physician should study the case carefully. It was here that a mistake was made, because a woman had a good shape, was otherwise in good health, and there was no indication of any difficulty, she was permitted to go until the time of labor had arrived, and the obstetrician in very many instances had not the remotest idea of the capacity of her pelvis, or of the attitude of the fetus within the uterine cavity, and it was because of lack of this knowledge that the woman went into labor, and then labor was protracted from some cause or other, the difficulty of which was detected by the consultant, who saw the necessity of performing hebstomy, Cesarean section, version, or craniotomy, as the case might be. His sole object in speaking on this paper was to caution the profession anew, and he would do it on every

possible occasion, that every case of pregnancy should be thoroughly studied before the woman went into labor. The physician should know all about her pelvis, about the position of the fetus, as well as the condition of her kidneys, heart, liver, etc.

DR. ERNEST S. LEWIS, of New Orleans, thought the obstetrician should thoroughly examine every woman whom he expected to confine, not only to determine the presentation of the fetus, but to correct any malpresentation, if it was possible; also to determine the condition of the pelvis by proper mensuration. Statistics showed that Cesarean section, the primary operation, was not attended with any more gravity than the removal of an ovarian tumor. He fully agreed with the author of the paper in regard to that point, and that the danger was proportionate to the length of time the woman had been in labor, whether examined or not. There was greater danger of infection if frequent examinations had been made, or if instruments had been used.

DR. REUBEN PETERSON stated that if there was one subject in the whole range of medicine that had been neglected in the last twenty years, it was obstetrics. This could be explained in a way by the greater pecuniary rewards which had accrued to abdominal and other kinds of surgery, so that it had made the obstetric feature more or less anomalous in this country. Many men graduated from medical colleges without an accurate idea of what to do for a woman during pregnancy, or how to size up a difficult case before labor. The specialist was usually called in after the practitioner had failed to deliver the woman by the natural way. The time was coming when the operation of high forceps would not be taught in our medical schools as an obstetric procedure. High forceps were put on when the head had not entered the pelvic inlet. There was some disproportion between the head and the superior strait, and in my opinion Cesarean section gave far better results to the woman and to the child than did the operation of high forceps.

DR. McMurtry, in closing, stated that the attitude of the profession toward Cesarean section was a very serious one, and it should be corrected. It was the highest function of an association like this, whose expressions went out to the profession and were looked upon as authoritative, to correct erroneous impressions, and one of the erroneous impressions he alluded to, was the general attitude of the great body of medical practitioners; namely, that Cesarean section should not be done until the patient had been examined by two or three men; that these examinations were made with the most perfect observance of asepsis, and all ordinary means of delivery had been tried on the patient for hours. The important point he wanted to impress was to get the great body of the profession to recognize early, if not before labor, early after labor had begun, that it was a case suitable for Cesarean section.

FORMATION OF A NEW VAGINA.

DR. ALEXANDER HUGH FERGUSON, of Chicago, reported three successful cases. In the procedure presented the author did not claim to produce a normal vagina, still in two of the three cases reported a vagina had been formed which yielded satisfaction. In the third case the woman was unmarried, but there was no doubt that the vagina would prove as efficient as the other two. The technic of the operation varied slightly in each case, but the underlying principles were the same; namely, first, to utilize the available mucous membrane; second, to form three flaps; third, to tunnel through the peritoneum behind the bladder and in front of the rectum, dissecting the peritoneum from both structures without opening the peritoneal cavity; fourth, to invert the flaps into the tunnel thus formed and suture them in place with catgut. The lateral flaps include the mucosa of the labia minora on either side, exercising care not to interfere with the mucous membrane in connection with the clitoris and meatus urinarius. The central flap was cut as thick as possible in order not to interfere with nutrition. The lateral flaps were cut with the same precaution in mind. The fact that the flaps were not sutured together rendered the cavity dilatable to an ideal extent. Horse hair was used to close over the denuded areas. A roll of gauze, about 7 inches long, was anointed with sterile vaselin and zinc oxid and inserted into the plastic vaginal canal. The external end spread like a flange and was held in place by a firm pad. This must not fit too tightly.

As to the after-treatment, the initial dressing must not be withdrawn for six or eight days. The parts must be kept as aseptic as possible. The internal stitches were catgut and might be left to become absorbed. The horse hair should be left in place for two weeks. Absolute cleanliness without antiseptics was of primary importance. The patient must remain under observation for at least three months.

A POSITION FOR SAVING TIME IN COMBINED ABDOMINAL AND PELVIC OUTLET OPERATIONS.

DR. A. C. SCOTT, of Temple, Texas, described this position in the following language: "By the use of any metal knee-holder which fits comfortably in the popliteal space, one may secure a combined exposure of the abdomen in an elevated position, and at the same time exposure of the pelvic outlet, permitting the use of selfretaining specula, if desired. This is accomplished by having the popliteal knee-holder hinged on a short, upright bar which is broadened and slotted at the lower end to slide, with a set screw upon a horizontal metal bar, which in turn is fixed to a strong cylindrical upright bar, sliding in a vise-like clasp at the side of the operating-table. The sliding upon the horizontal bar allows adjustment for the varying lengths of

patient's thighs. The cylindrical sliding upright bar at the side of the table permits the thighs to be moderately flexed or fully extended, abducted or adducted at will. Before starting the anesthetic, the patient's hips are brought beyond the edge of the table and the limbs placed upon the knee-holder. A piece of bandage loosely wound about each foot and ankle is tied to a convenient point below the corner of the movable part of the table to prevent extension of the leg; another is placed above each knee to prevent elevation of the knee, thus securely holding them in their respective knee-holders. Any modern operating-table will serve the purpose for these attachments and enable one to secure the desired combined position if it has a pivotal point about the center, permitting the entire surface of the table to be raised or lowered at will. I use a modification of the Markoe table which operates with wheel and ratchet and can be changed by the anesthetist with perfect ease. After the patient is in position and the anesthetic is begun, the foot of the table is lowered some 5 or 6 inches for convenience of completing the preparation by thorough rinsing of the abdomen and vagina. This is done and the table returned to the horizontal plane without again having to take hold of the patient with the hands.

The advantage of this position are: 1, where two operators are working together with plenty of assistants at their command, the time required for many complicated operations may be reduced to a marked degree and often as much as 50 per cent; 2, by changing the axis of the table, the pelvis and the abdomen may be lowered, if desired, or elevated to secure the advantages obtained by the Trendelenburg position at any stage of an abdominal operation without interfering with work simultaneously being done upon or through the pelvic outlet; 3, all the advantages of the Trendelenburg position may be obtained without its disadvantages; 4, all the advantages of the dorsal position for pelvic outlet work are obtained without flexing the thighs upon the abdomen or otherwise interfering with work required through the abdominal wall; 5, the final preparation of rinsing both the abdomen and the vagina is easily accomplished while the anesthetic is being given without having to lift or disturb the patient again; 6, by wide abduction of the extended thighs during abdominal operations room is made for a second assistant to stand with advantage for sponging, ligating, and retracting equal to the one standing directly across the table from the operator."

THE TREATMENT OF ANTEFLEXION.

DR. HENRY T. BYFORD, of Chicago, stated that he did not offer a new treatment. He asserted that the newest methods were not satisfactory and selected for consideration one of the old methods and gave the essentials and technic that had given success in his practice. The method consisted in keeping the cervix overdistended for six months to a year, and in the prevention, during the

second year, of contraction sufficient to cause symptoms. The advantage of this method over all others consisted in keeping the uterus under the influence of the treatment until the cervix developed to a size that would not interfere with uterine drainage and cause symptoms, when the case could be compared to those of symptomless rigid ante flexion that they sometimes observed in multiparæ. He claimed that the cutting operations favored atrophy of the cervix, and were irrational in most cases because the cervix was already deficient in development.

AN UNUSUALLY LARGE OVARIAN CYST.

DR. J. SHELTON HORSLEY, of Richmond, Virginia, reported a case (and showed photographs) of a large ovarian cyst which weighed 116 $\frac{1}{2}$ pounds. The greatest abdominal circumference was 63 inches. It was successfully removed. He referred to the fact that operation in these cases of large ovarian cysts usually had a high mortality-rate on account of the pressure which caused organic changes and made the patients poor surgical risks.

DISCUSSION.

DR. THOMAS S. CULLEN, of Baltimore, stated that four and a half years ago he saw a patient who weighed 174 pounds. She was supposed to have had an ovarian cyst, but it turned out to be a fibroid tumor. They operated, removed an 89-pound fibroid, and the patient immediately after operation weighed 85 pounds. After a week in the hospital, when edema began, she weighed 80 $\frac{1}{2}$ pounds, and although she developed bed-sores she promptly recovered. In that case after operation the ribs stuck out 6 inches and the recti muscles which lay high up on either side gradually came together until at the present time they were only 2 c.c. apart.

DR. ALEXANDER HUGH FERGUSON stated he was called to a small town near Indianapolis to see a woman with a large ovarian cyst. She had carcinoma of the left breast and gallstones. She was in a bad condition. He introduced a small trocar and cannula which went into a cyst that was quite watery. The trocar was left in place for twenty-four hours. The next day she was able to eat, a thing she had not been able to do for two weeks, and was able to swallow. Her heart, which was bad, improved. He passed a larger trocar in another direction through the same opening, and allowed it to remain for another twenty-four hours, and then she was brought to Chicago, and three days later he operated and at one sitting removed the cyst, the left breast, and 1250 gallstones from the gall-bladder, and she recovered.

A MALIGNANT INTESTINAL GROWTH REQUIRING THE REMOVAL OF AN UNUSUAL NUMBER OF ABDOMINAL STRUCTURES.

DR. THOMAS S. CULLEN, of Baltimore, reported the case of a patient, fifty-six years of age, very pale and emaciated. Within

a few months prior to operation her weight had been reduced from 120 to 85 pounds. Pelvic examination revealed a growth plastered on the posterior surface of the uterus. This almost filled the pelvis and felt very much like a myoma. The patient, however, gave a history of flattened stools occasionally associated with diarrhea and a malignant intestinal growth was suspected. On opening the abdomen Dr. Cullen found a growth involving the lower portion of the ascending colon, also a loop of small bowel and extending out and forming a tumor mass in the mesentery of the small bowel. Intimately blended with this tumor mass was the uterus. The appendix was also involved. As the patient's condition was very poor the operator hesitated to do anything, but the family physician said that she could only live a few days in her present condition, and that she was suffering a great deal. As no secondary nodules could be found either in the mesentery, in the lymph glands, or in the liver, removal was undertaken. The uterus was amputated through the cervix and with the tubes and ovaries turned up on the surface of the tumor. The appendix was next amputated, carefully covered over with gauze, and also turned up on the tumor. About 3 feet of small bowel and almost a foot of large bowel were then clamped off and the mesentery of the small bowel containing the tumor gradually tied off. All the structures mentioned were removed in one piece, as it would have been absolutely impossible to separate the uterus without entering the cancerous mass and opening up the bowel. It was possible to remove the entire mass without soiling the peritoneum. The four ends of the bowel were closed. A lateral anastomosis was then made between the small bowel and the cecum, and as the descending colon had been redundant it was possible to do a lateral anastomosis between the descending colon and the sigmoid. A drain was laid in the pelvis. The specimen was exhibited. The patient made a very satisfactory recovery and was at present in good health. The ultimate outlook was not a favorable one.

CANCER OF THE UTERUS.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, described the technic of the radical abdominal operation for uterine cancer, based upon an experience with forty-four cases.

OFFICERS.

The following officers were elected for the ensuing year: *President*, DR. RUDOLPH MATAS, New Orleans; *First Vice-President*, DR. GUY LEROY HUNNER, Baltimore; *Second Vice-President*, DR. J. GARLAND SHERRILL, Louisville; *Secretary*, DR. WILLIAM D. HAGGARD, Nashville; *Treasurer*, DR. WILLIAM S. GOLD-SMITH, Atlanta.

Washington, D. C., was selected as the place for holding the next meeting; time, December, 1911.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Meeting of November 25, 1910.

S. M. Brickner M. D., *in the Chair.*

DR. I. C. RUBIN presented a specimen of

PRIMARY OVARIAN PREGNANCY.*

DISCUSSION.

DR. ROBERT TILDEN FRANK said he had examined the specimen presented by Dr. Rubin and there was no doubt but that the findings were unmistakable, both microscopically and macroscopically. There was the possibility, however, that the cells thought to be decidual cells might be interpreted as stroma, the result of the hemorrhagic condition. This was the only point on which there might be a difference of opinion.

DR. KNIPE called attention to the monograph of Bryson and Teacher on ovarian pregnancy in which was brought out the rarity of ovarian pregnancy.

PUBIOTOMY FOR DYSTOCIA.

DR. FREDERICK C. HOLDEN reported the case of a woman thirty-eight years old who was brought to the hospital in an ambulance in labor and at term. A midwife was in attendance at first, then a physician was called in, chloroform was administered for an hour and a half, but the repeated application of the forceps failed to bring the head into the pelvis and the patient was then removed to the hospital. When admitted the fetal pulse was found to be to the left and below the umbilicus. There was a longitudinal presentation with the vertex above the brim, dorsum anterior position. The uterus was tense. The vaginal examination revealed a lax introitus, with a cervix fairly dilated. It was decided that the best interest of both the mother and the child would be conserved by pubiotomy rather than by an abdominal section. Müller's method was used without being able to force the head into the pelvis.

Pubiotomy was performed by the method of Döderlein. The bone was sawn through, moderate pressure was made upon the fundus and the head glided into the pelvis; the use of forceps effected a very easy delivery. The child weighed 7 pounds, 11 ounces; the length was 51.5 cm.; the occipitomenal diameter

* To appear in a later issue of this Journal.

was 13 cm.; the occipitofrontal was 11 cm.; the suboccipitobregmatic was 10 cm., and the biparietal 10 cm. After the operation the patient was returned to the ward in very good condition.

The following were the points of interest. Fowler's posture was at once instituted and fluid extract of ergot given. The patient urinated voluntarily in six hours and at normal intervals afterward. Morphine was given to relieve the pain in the back and abdomen.

The patient was discharged on the thirty-third day and in good condition; her walking gait was almost normal, although there was a slight mobility present at the point of fibrous union. The vaginal outlet was lax. The child nursed at the breast. The patient ran and walked normally and no motion was detected at the point of union. She had a moderate cystocele and rectocele. She had been in good health and attended to all her household duties since her return from the hospital.

CESAREAN SECTION FOR CONTRACTION RING.

DR. FREDERICK C. HOLDEN reported the case of a primipara, twenty-two years old, who was admitted to the hospital June 24, 1910, at term. She had been in labor twenty hours, with the membranes ruptured and complete dilatation for hours. Her condition was good, pulse 88, and labor pains very strong and regular. Examination showed a full term uterus with a live child, pulse 160. Her external measurements showed an interspinous, 22 1/2 cm.; intercrystal, 28 1/2 cm.; external conjugate, 19 cm.; estimated internal conjugate, 10 cm. Under chloroform anesthesia the cervix was fully dilated; the fetus was found in L. M. P. position, a firm contraction ring around the child's neck and shoulders, completely preventing flexion of the head.

Twenty-two hours after the onset of labor, seven and a half after the membranes had ruptured, six hours after the collar was found, a Cesarean section was performed. There was delivered a normal child weighing 6 pounds and 10 ounces, 48 cm. long, suboccipitobregmatic 10 cm., biparietal 10 cm., occipitomenta 14 cm., and occipitofrontal 14 cm. After the removal of the placenta and membranes, a compress saturated with tincture of iodine was passed through the cervix from above and removed from the vagina at the completion of the operation.

The time of completed operation was eighteen minutes. The patient had an uninterrupted convalescence.

DR. JOHN O. POLAK said what interested him very much in the first case reported by Dr. Holden was the ease with which the head of the child fell into the pelvis after the bones had been severed. The child's head was above the brim of the pelvis in this case and immediately on section of the bones the head dropped into the pelvis and was delivered spontaneously.

In that class of trying cases where the patient had been days in labor he did not consider pubiotomy an elective procedure; he rather favored section.

With regard to Dr. Holden's second case, it was a very interesting report where, in order to deliver the child, one must cut through the constricted ring. In one case the ring had been pulled so tightly that there was practically nothing but membrane over the head of the child, and this prevented the head from engaging. After incising through that ring the head was readily delivered.

DR. SIDNEY D. JACOBSON said he presented a case of pubiotomy some two or three years ago, and since that time he had had six more cases, making seven cases altogether. He believed the open method should be recommended in these cases. The objections to the closed method was in the hemorrhage in the depths of the wound and partly from the subcutaneous section of the bone; blood escaped by these two avenues. These women lose a great deal of blood by the closed method; whereas, by the open method one could readily ligate or clamp a little artery or vein. In four out of his seven cases there had been no hemorrhage worth mentioning. Seven of the mothers recovered and six babies. He reported one case in which the operation had been done as an elective measure. One year ago this woman was in labor and she had an uncompensated mitral stenosis. She had edema of the legs because of the acute dilatation of the heart. She had a slight contracted pelvis and, with a normal heart, she might have delivered herself. But with such a bad heart he thought it unwise not to interfere. Under cocain and a few whiffs of ether delivery was soon effected by pubiotomy, the closed method.

DR. F. C. HOLDEN made use of the Gigli saw and just went through the bone, and did not go beyond it. He did not see why they should be bothered by an acute hemorrhage if they used care in the work.

MULTIPLE PUERPERAL ABSCESES OF THE UTERUS.

DR. WILLIAM H. W. KNIPE describes this case of multiple abscesses of the uterus with several foci in the broad ligament. The diagnosis was made by Dr. Brodhead. The patient was delivered March 1; within two days the temperature rose to 102; then for some time it varied from 101 to 106. The uterine smear contained cultures of gonococci. After twenty-four days, with the patient getting weaker and weaker, with her pulse running between 124 and 130, with a septic temperature going up and down, they decided to remove the uterus. After the operation the temperature was 105.5; the next day it was 106.5. She was infused while on the operating-table and afterward in the ward. One week after the operation she developed a pneumonia. Afterward she developed a double thrombophlebitis. Now she was absolutely well. An interesting question came up regarding the gonococcus infection, for her tubes and ovaries were absolutely normal.

DISCUSSION.

DR. WILLIAM S. STONE said that they must all admit their failure at being able to diagnose these conditions and operate upon them at the right time.

DR. C. CLARENCE SICHEL asked for more information regarding the blood findings and cultures.

DR. JOSEPH BRETTAUER asked if gonococci were found in the uterine abscesses.

DR. KNIPE said that when he first saw the patient, he thought she had a typical pus tube. He could feel the fundus. On the right side was a mass which he thought to be a pus tube that was adherent. Blood cultures were taken and proved to be negative. Dr. Knipe said that he would make a more detailed report of this case later. With regard to the nature of the pus taken from the uterine abscesses, it was found to be sterile; the cultures showed diplococci which did not stain well, that was, they appeared to be dead. He could not state positively whether this was a case of gonococcus infection or not because gonococci were not demonstrated in the pus from the abscesses.

WHEN SHALL WE OPERATE IN PUERPERAL SEPTIC INFECTION?

DR. JOHN OSBORN POLAK read this paper. Sepsis was not measured by its mortality, but by its morbidity. His own observations in over 1,000 cases of septic infections following labor and abortion had convinced him that this morbidity was largely due to the tendency of practitioners to interfere with the endometrium by surgical methods. In his last 100 cases, sixty-seven patients had been subjected to one or more curettings before admission to the hospital. Any intrapelvic or intrauterine manipulation made during the acute stage of a puerperal or post-abortion sepsis always broke down and disturbed Nature's protective barrier and permitted of the dissemination of the infection through freshly abraded or penetrated surfaces. Experience had taught that the endometrium should never be curetted in streptococcic infections; the curet here was distinctly meddling. It broke down the protective wall, and allowed the streptococci to penetrate the musculature and reach the peritoneum and parametrium. The danger was increased as the period of pregnancy advanced. Digital curettage, however, was permitted in putrefaction of decidual and placental remains, with resulting sapremia. From the laboratory and clinical observation they had learned that the streptococcus and gonococcus were but slightly if at all affected in their activity or virulence by bacterial substances, but were readily opsonized and ingested by the phagocytes; efforts, therefore, should be directed to the development of a real or artificial phagocytosis. It was unfortunate that the blood resistance of the puerperal patient was poor.

In these anemic women thrombophlebitis of the femoral vein had frequently occurred.

It was in infections of low virulence that most could be expected from vaccines. Aside from infected lacerations, abrasions and ulcers about the vulvovaginal orifice, the vagina and cervix which represented simple suppurating wounds which tended to heal by granulation, infection took the form of putrid or septic endometritis, the primary focus of all postpartal or postabortal sepsis was found within the uterus. As long as the phagocytes and antitoxins were able to overcome the infecting organism by exudative limitation and localized suppuration, just so long was the process limited and amenable to surgical aid.

Dr. Polak's report was based upon the study of 256 patients suffering from postpartal and postabortal septic infection. The total mortality of the series was 7 or less than 3 per cent. Each patient was treated according to the clinical and bacteriological diagnosis. A sapremia or putrid endometritis uncomplicated by parametric or peritonitic lesions were recorded sixty-seven times. All these patients recovered. Intra- or extraperitoneal exudates arising from the pelvis were presented by seventy-four patients; sixty-seven had been subjected to one or more curettings before admission to the hospital, consequently they had come to consider exudative peritonitis as a sequel of untreated or badly treated endometritis. Eight of these exudates terminated in suppuration. In this series suppuration was a late result. Pelvic cellulitis was noted twenty-eight times; these women had lacerations which opened an avenue for the invasion. In only one of these women did suppuration occur. Eighteen cases of streptococci septicemia and ten cases of bacteremia afforded an interesting study. The blood culture made a positive diagnosis. The streptococcus was demonstrated in the blood of eighteen women, and a mixed infection was found in the blood of ten. In all, the uterus was empty and well contracted; a purulent or sanguinopurulent discharge was present; there was marked prostration, high temperatures and pulse, with a destruction of the red cells, a diminution in the hemoglobin, and very little white-cell resistance. Two fatalities occurred. In this series there were five cases of ruptured uteri with three complete recoveries. Twenty-one patients were admitted with pelvic peritonitis from postabortal infections; seventeen had been curetted before entering the hospital, and four had had the uterus emptied after admission. All of these patients were freely opened and drained through the vagina, and all recovered. Sixteen cases of uterine and femoral thrombophlebitis were observed.

The following summary was offered: First, each case of postpartum or postabortal infection must be studied individually and an accurate diagnosis made on the clinical, bacteriological, and blood findings before any treatment was instituted. Second, that nature was competent in the majority of instances to local-

ize and circumscribe the infection. Third, that curettage, douches, and examinations, during the acute stage, broke down barriers and opened avenues for the further dissemination of sepsis to the endometrium, parametrium, and adjacent tissues, and that the danger from curettage increased with each month of pregnancy. Fourth, that enormous pelvic and abdominal exudates might disappear without operation and that in time enlarged ovaries, tubes, etc., might assume their proper size and function; further, that as long as the patient's general condition improved, no surgery was advisable. Fifth, that all operations were attended with less risk after the acute stage of the infection had subsided, and that an exact diagnosis was more easily made at this time. Sixth, that after the uterus was thoroughly emptied, the pelvis should be left absolutely alone, and that they should make every effort to support the patient, and increase her natural blood resistance. Seventh, that vaccine therapy had a definite but limited field in the treatment of puerperal septic infection. Inoculating with the autogenous vaccines would promise prompt results in staphylococci and colon bacilli infections, but in streptococci poisoning the vaccine treatment was unreliable. This was of value only when the virulence of the germ was attenuated or when nature had already developed a phagocytic defense. Eighth, that extra-peritoneal drainage of local foci should be selected when possible, either by incision just above Poupart's ligament, or by posterior vaginal section; when this was impossible, because of an inability to determine the exact anatomical relations of the local foci, an exploratory laparotomy was justifiable in order to make an exact diagnosis, and determine upon the safest route for drainage. Ninth, that operative interference, in the acute stage of sepsis, was only indicated in general purulent peritonitis, postabortal pelvic peritonitis, infected tumors in or near the genital tract, and uterine rupture, when said rupture had occurred in the course of labor, and had been handled outside of a well managed maternity; and, finally, that thrombophlebitis was a conservative process on the part of nature to limit the infection, and that any form of pelvic manipulation only tended to break down and separate parts of these thrombi, extending the infection to the more remote parts, thus jeopardizing the patient's life.

DISCUSSION.

DR. HERMAN J. BOLDT was unable to find any flaw in anything that Dr. Polak had stated, and the only remarks he felt that he could make would be mere repetition. He asked, however, what had been his experience with the mixed vaccines. He thought that possibly there was a field for them in this form of therapy. He emphasized what Dr. Polak had said of the injurious effects of traumatism these women received in the early stages and before they were brought to the hospital.

DR. JOSEPH BRETTAUER also wished to endorse all the remarks made by Dr. Polak, but he was somewhat surprised that he did not hear more of thrombophlebitis. A statement made by him some ten or fifteen years ago and which could not be made often enough was that the curet killed more women in the puerperium than any disease or complication of childbirth. It was the general practitioner that in his over-anxiety killed these women, unintentionally, it was true. It was these local infections which, if let alone, would take care of themselves; if the curet was used, then the endometrium became infected by the bacteria from the localized infection. In cases of localized processes Dr. Brettauer did not use vaccines; in no case that he knew of had the vaccines been of any benefit at all.

DR. F. C. HOLDEN said it was up to the teachers in the medical schools to speak against the use of the curet; its use was so often attended with trouble. Any young man should be properly qualified before he attempted its use.

DR. KNIPE said that one must see enough cases of puerperal sepsis to come to the positive conclusion that the less they did the better for the patients; let them alone. The cases he had interfered with did not do well, while those patients that he let alone improved.

DR. ROSS MCPHERSON added his endorsement to what had been already so well stated. He had seen a great many cases of puerperal infections and he had followed the treatment that was identical with Dr. Polak's and with good results. With regard to the use of vaccines, he occupied the same position as did Dr. Brettauer; he had never a case with the staphylococci in which the use of the vaccines resulted in the least good. Treatment in the fresh air and attention to diet, etc., were of great aid in these cases because the majority of them were run down. The tone of the blood should be raised, improve their resisting power, and better results would follow. He believed that the curet had killed more people than any instrument used in surgery. He thanked Dr. Polak for what he had given them in his valuable paper.

DR. GEORGE G. WARD, JR., emphasized what had already been said regarding the use of the curet, especially in the hands of the general practitioner. In postgraduate teaching he had learned that nearly all the students had the idea that any one could use the curet. The dangers of this instrument should be more emphasized by all teachers, not only in the puerperal cases but in the gonorrheal as well.

DR. WILLIAM S. STONE was impressed with Dr. Polak's paper, especially when he took it in conjunction with the paper read last spring; both presentations of this subject were most valuable. These papers he considered to be so valuable because they came from one who knew what he was talking about. With regard to the curet, he believed that he had never seen a case of puerperal sepsis that had not first been attended by a physician and this in-

strument used. Alongside of this statement he also said that he had not seen a single case that had been attended by a midwife; if the case ended fatally it was because of what the doctor who was called in had done. He considered these statements nearly true.

DR. SAMUEL W. BANDLER emphasized the importance of the diagnosis of these cases, especially two, three, or four days after confinement when there was almost no discharge, but a rapid pulse, etc. He had seen these patients die in a few hours. These cases were best diagnosed by bimanual examination; the more there was in the pelvis the more would they feel; the more they could feel there the more could be reached. On several occasions he had evacuated the cellular exudate which was not purulent, getting from one-half to a quart through the vagina; this looked like beef extract. These patients improved and many got well. He asked why these cases should not be opened?

DR. HERMAN M. COLLYER said that each case was an individual case and so must be studied. Abscesses should be opened. He made frequent use of iodine injections.

DR. JOHN O. POLAK had at present definite ideas in regard to thrombophlebitis. They had not seen many typical cases, such as Dr. Brettauer had described, cases with the typical chills, temperature, foci, etc. Only one case had got well herself. It was in reality a case of true pyemia. Subsequently she developed an abscess in the lungs, a staphylococcus infection. All the other cases, eighteen in all, were cases of thrombophlebitis of the femoral veins and of the pelvic veins also. All were self-limited and all recovered.

In reference to Dr. Bandler's statement about incising the exudates, Dr. Polak said he used to do the same thing, but he had found that later he got other foci to deal with. Therefore, it was a very unsatisfactory procedure in his hands. He emphasized that in those cases where there were no localized foci of pus, it was better to let them alone, particularly if the Fowler position was maintained.

DR. CLARENCE SICHEL asked why Dr. Polak left gauze in eight days.

DR. POLAK replied that they used rolls of gauze, six or eight of them; they pulled out the center roll on the fourth day, another on the fifth day, etc., thus allowing the cavity to gradually come down. They never had to enter a cavity to reopen it.

In answer to questions regarding the blood he thought he must have been misunderstood; what he intended to state was that no matter what bacteria were found in the uterus, it matters not so long as they were not found in the blood.

REVIEW.

INDUCED CELL REPRODUCTION AND CANCER. The Isolation of the Chemical Causes of Normal and of Augmented, Asymmetrical Human Cell-division. By HUGH CAMPBELL ROSS, M. R. C. S. (Eng.), L. R. C. P. (Lond.). Surgeon, Royal Navy (Emergency List); Director of Special Researches at the Royal Southern Hospital, Liverpool; and Honorary Clinical Pathologist to the Royal Liverpool Country Hospital for Children. Being the results of researches carried out by the author with the assistance of JOHN WESTRAY CROPPER, M. B., M. Sc. (Liv.), M. R. C. S. (Eng.), L. R. C. P. (Lond.). Assistant to the Research Department of the Royal Southern Hospital, Liverpool. With 129 illustrations. Philadelphia. P. Blakiston's Son & Co. Pp. 423. Price \$4.50 net.

This volume contains the record of some very suggestive and strikingly original investigations of the living white cells of the blood, and other living cells, by implanting them on a film of agar jelly kept at a suitable temperature. It is found that when certain stains or alkaloidal substances are added to the jelly that they diffuse into or absorbed by the cells and cause certain remarkable phenomena, such as exaggerated ameboid movements or rapid mitosis, cell-division occurring under certain conditions in as short a time as three minutes. These phenomena of the actual processes of division of a mammalian cell, an occurrence never before seen by the human eye, and others of equal interest, are described at length and with minute detail of technic.

It is shown that rapid cell-division may be caused by certain substances which the authors call "auxetics." These are set free in the body by cell death—that is, by "irritation," by wounds, by bruising of the tissues and so on—and their action is greatly accelerated by the addition of certain alkaloids, as choline, or cadaverine, or atropine.

It is demonstrated that the rapid mitosis and cell production required in healing may be produced in this way and that it may be the explanation of the excessive cell proliferation found in cancer.

The possibilities of the theory as borne out by certain facts stated by the authors are most startling and make one feel that here may be a real and positive advance toward a rational solution of the cancer problem both in its relation of cause and of cure. Whether this be so or not the method is surely destined to be of far-reaching influence in the advancement of our knowledge of cellular pathology.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Pelvic Conditions Resulting from Slighter Forms of Puerperal Sepsis.—William J. Sinclair (*Med. Press*, 1910, p. 677), speaking especially of cases of "one-child sterility," says that these patients pass through the puerperium without any diagnosis of morbidity. Much harm may be done in the female pelvis with the temperature under 100.4° and without causing greater frequency of pulse-rate than may be accounted for by the excitement due to the physician's visit. His daily call, also, is usually made in the morning when temperature and pulse are at their best. Slight chilliness, accelerated pulse, slight and not evanescent rise of temperature, sometimes pain, and at times foul-smelling lochia are the symptoms to be noted. Efforts at exact diagnosis by manipulation may do more harm than good. Active treatment must come later. Every woman should be carefully examined within six or eight weeks after her confinement. If sub-involution without complication is discovered, treatment should be at once begun, with the object of bringing the uterus to its normal condition. It may then readily succeed. If uncomplicated retroflexion is diagnosed, the use of tampons, followed by the temporary wearing of a pessary, may possibly be successful. If tampons and pessary fail to restore the uterus to its normal condition and position, adhesions must be suspected, and efforts made to break them down by manipulations under anesthesia. Failing success by manipulation, ventrofixation with the necessary modifications is the only rational operation. In every case of one-child sterility with retroflexion, whatever the negative evidence, puerperal sepsis to some degree should be assumed as the cause, and ventrosuspension resorted to. As the futility of pessary treatment becomes more generally recognized, ventrosuspension will take its proper place as the only reliable and successful method of treatment.

Statistical Study of Spontaneous Labor in Rachitic Contracted Pelves.—Marioton (*L'Obstét.*, Oct., 1910) has collected statistics of the results of noninterference in contracted pelvis of rachitic type, as to the mortality of mother and child, from various sources, and gives his conclusions. In women with a contraction of not less than 9 cm. conjugate a spontaneous termination of labor is to be confidently expected. It occurs in 80 per cent. of such cases. Below 8 cm. spontaneous labor is the exception, not more than 25 per cent. of spontaneous deliveries occurring. Between these limits is the critical point. Pluriparity has no

effect on the evolution of the labor. The size of the child has an important bearing on this matter. Below 8 cm. conjugate spontaneous labor occurs only in children who have not yet reached the eighth month of intrauterine life and weigh less than 2,500 grams. The smaller the child the more likely is the mother to have a spontaneous labor. In pelves from 8.6 to 9 cm. the fetal mortality is 8 to 10 per cent. As the conjugate grows smaller the infantile mortality increases. Multiparity has no influence on the life of the child, but small size of the child favors its life. Prognosis is good in pelves of 9 cm., worse as the diameter grows smaller. In pelves of 7 cm. the mortality is 100 per cent. In children of 2,500 to 3,000 grams the prognosis for life is better as the size of the conjugate increases, while under 2,500 gm. the child is generally too weak and premature to survive. With the above reserves we may say that for the woman with a rachitic contracted pelvis, when she is carefully watched and treated sensibly the prognosis is good.

Cesarean Section under Local Anesthesia.—R. K. Smith and J. Schwartz (*Surg. Gyn. Obst.*, 1910, xi, 423) record two Cesarean sections under local anesthesia of the abdominal wall, one before labor, the other thirty-three hours after its onset. The solution used was a 1/2 per cent. of novocain in normal salt solution, to each 10 c.c. of which was added one drop of 1 to 1,000 solution adrenalin. This solution was freshly made and boiled for five minutes just before using. Two points, one 9 cm. above the umbilicus and the other a like distance below it in the median line, were infiltrated with a drop of the solution and from these as points of departure the solution was injected about a diamond-shaped area subcutaneously and then subfascially. The line of the incision was not infiltrated in either of these cases. The amount of the solution used was about 75 c.c. in Case I and 60 c.c. in Case II; a smaller amount might be sufficient. The writers were impressed chiefly by the absolute absence of pain throughout the operation, notwithstanding dilatation of the cervix from within the uterus in the first case, and squeezing of the uterus forcibly in the second to see if pain could be produced. Neither of these patients manifested any symptoms of shock, such as seen after this operation under general anesthesia.

Treatment of Eclampsia by Dilatation or Incision of the Cervix.—In discussing the reasons for operative treatment of eclampsia, Reuben Peterson (*Surg., Gyn., Obst.*, 1910, xi, 210) says that while its cause is yet unknown, the intoxication evidently is intimately associated with a disturbance of protein metabolism. Since the auto-intoxication is caused by the pregnant state, it follows that the desideratum for the eclamptic is the cessation of pregnancy. In a large proportion of cases the eclamptic seizures cease after the uterus has been emptied. Postpartum eclampsia occurs because of the severity of the intoxication prior to the evacuation of the uterus. In other words the intoxication was so profound that its results could not be

completely averted by the emptying of the uterus. The mortality of eclampsia is much less under the plan of immediate delivery than under expectant treatment. No time should be wasted in medicinal treatment after the first eclamptic seizure, but the uterus should be emptied at once. Such treatment not only will be best for the mother, but it will give the child the best chance for life. The slow methods of emptying the uterus through the use of the bougie, the cervical pack, or the bag are not applicable to eclampsia. That method should be chosen which will empty the uterus quickly with a minimum amount of injury and shock to the patient. Where the cervix is soft and easily dilatable this can be best accomplished by manual dilatation. Instrumental dilatation is too apt to result in severe cervical lacerations even in skilled hands, to make it a desirable method for the practitioners. Vaginal Cesarean section is the ideal operation for rapid evacuation of the uterus in eclampsia. Abdominal Cesarean section for this condition, while giving good results so far as the child is concerned, has such a high maternal mortality that the operation is contraindicated except in eclampsia with contracted pelvis or where delivery through the natural passages for other reasons is impossible.

Ovarian Pregnancy.—An instance of this rare condition is recorded by A. W. W. Lea (*Journ. Obst. Gyn. Brit. Emp.*, 1910, xviii, 182) who operated after rupture, removing the left tube and ovary. The Fallopian tube perfectly normal in appearance. The abdominal ostium patent and the fimbriæ healthy. The ovary somewhat enlarged, and its lower pole had been distended by a blood-cyst which had ruptured and was partially destroyed during removal. The great part of the substance of the ovary apparently normal, but a portion of the cortex had been expanded to form the wall of the cyst and continuous with a mass apparently consisting of blood coagula which contained numerous chorionic villi. Sections taken from various portions of the wall of the cyst show the presence of ovarian tissue and follicles.

Aeration by Osmosis.—This is the term applied by W. E. Fitch (*Pediatrics*, Oct., 1910, 673) to the method which he recommends and claims to have found efficient in the treatment of asphyxia of the new-born. In such cases the placenta should be spread out with the maternal surface cleansed and exposed, so that free access of air can be afforded. If necessary, on account of numerous, or small clots, to use water it should be warm, as it is remarkable how quickly the use of cold water will chill the child.

Abdominal Wall After Delivery: Prevention of Abdominal Insufficiency and Neurasthenia.—H. M. Stowe (*Surg., Gyn., Obst.*, 1910, xi, 269) says that the physician has to deal with two classes of pregnant women who give him much concern. In one is the wage earner or factory girl who possesses a narrow chest, is stoop-shouldered, and is poorly fed and clothed. She frequently

does not consult him until the advent of labor. In such instances, pregnancy and labor are often followed by ill health unless careful attention is given to the patient. In the other class, the well-to-do patient is suffering from a life of "excessive refinement." When the child is born, the intraabdominal tension is suddenly lowered, the uterus has a tendency to relax while the mesenteric vessels dilate and fill with blood. Both portal and lymph circulations are sluggish because both depend upon a relatively high intraabdominal pressure. At this time we should not wait for symptoms to develop in the lying-in woman, but recognize the importance of restoring the abdominal walls as well as the uterus to the normal nonpregnant state. In mild cases all that is necessary is to reduce the abdominal tension by relieving the bowels regularly of flatus and feces, secure uterine involution, and prevent overdistension of the bladder. The patient should remain in bed until the uterine fundus is no longer palpable in the abdomen, generally on the tenth day, when no perineal stitches or puerperal infection call for longer rest. In women predisposed to abdominal insufficiency, or whose abdominal walls are relaxed active exercises should be instituted early in the puerperium. All women suffering from lacerated perineum, pelvic pain, sepsis, anemia from postpartum hemorrhage, or other serious accident of labor should wait a longer time before undertaking gymnastic work. These movements aid in stimulating muscular activity in the abdominal walls, decrease the extent of rectal diastasis by contracting the interposed fascia, and strengthen the lateral muscles at a time when favorable results are more certain to occur. They tend to restore the intraabdominal tension before a permanent relaxation of the parietes and subsequent ptosis of the viscera take place. By suitable exercises it is possible to overcome the relaxation due to the pregnancy just passed; that resulting from former gestations is permanent. The writer describes in detail exercises for strengthening the abdominal muscles which should be practised twice daily but not to the point of fatigue. If the lateral walls are atrophic and the recti spearated, the binder should be used early. It should be worn until the abdominal wall is able to withstand the intraabdominal tension—a matter of from one to six months. If the abdominal wall remains permanently weakened and neurasthenic symptoms develop, it is necessary to wear the binder for years, unless the patient is willing to submit to operative measures.

GYNECOLOGY AND ABDOMINAL SURGERY.

Leukorrhea.—Henry Jellett (*Practitioner*, Oct., 1910, 443) states that there is an almost universal tendency to consider leukorrhea not as a symptom but as a definite disease, and to think that once the diagnosis of "leukorrhea" has been made the only thing remaining is to try stock remedies. It cannot be too

definitely stated that leukorrhea, like every form of pathological discharge, is due to a definite pathological condition; that this condition may be trifling or may be of the most serious importance, and that it is impossible, or almost impossible, to determine whether the condition is trifling or serious unless we first determine its exact nature. For these reasons the writer urges the necessity for a rectal or vaginal examination in order to secure accurate knowledge of the underlying cause. In virgins a rectal examination may be sufficient; but if not, no sentimental reasons should prevent vaginal exploration, with anesthesia if necessary. In the virgin, the most common cause of leukorrhea is cervical erosion in association with endometritis and in some cases with backward displacement of the uterus. Exceptionally, vaginitis may be the cause of leukorrhea, or tuberculosis of the Fallopian tubes if not causing their occlusion, or sarcoma of the body or cervix, and in later life carcinoma of the uterine body. Uterine myomata are fairly common causes of discharge. In the married woman also cervical erosion with endometritis is the most common cause. This may be the result of laceration of the cervix with or without bacterial infection. Uncommon intrauterine causes are retention of portions of an ovum and degeneration of uterine tumors such as myomata and carcinomata. Second in frequency as a cause of leukorrhea among the married is probably infection of the vulvar glands especially those of Bartholin. This is usually of gonorrheal origin. Next in order is vaginitis. Of extreme importance in either married women or virgins as a cause of leukorrhea is the presence of neoplasms, both benign and malignant. Cancer of the body of the uterus may be suspected from the nature of the discharge, but a positive diagnosis can be made only by the microscopical examination of a portion of the growth removed with the curet. A sloughing myoma of the uterus is occasionally seen. The writer feels that the facts above stated show that any form of routine treatment for vaginal discharge without first ascertaining the cause of the discharge is always absurd, and is sometimes even worse than absurd.

Conservative Surgery of the Pelvic Organs in Cases of Pelvic Peritonitis and of Uterine Myomata.—J. G. Clark and C. C. Norris (*Surg., Gyn., Obst.*, 1910, xi, 398) state that conservative pelvic surgery is chiefly adapted to pelvic inflammatory disease and to uterine myomata. They advise that almost all pelvic inflammatory cases be subjected to a course of preliminary treatment before operation. By this method, some cases will escape operation entirely, while the others can be operated on more easily, more quickly and with less mortality. A greater number of cases will also be found suitable for conservative operation. If possible, four to six weeks of normal temperature and blood counts should precede each operation. If pus be present which can be easily reached without traversing the peritoneal cavity it should be at once evacuated. In an extremely small percentage of cases, the symptoms may be of such a character as to preclude the possibility of

any delay. The end-results of salpingostomies are disappointing. Pregnancy rarely takes place, as the newly formed ostii quickly become occluded and cause a recurrence of symptoms. Conservation of a grossly normal tube in the presence of diseased appendages on the opposite side offers good results, especially if a course of preliminary treatment has been followed out prior to operation. Conservation of macroscopically diseased tubes is unsatisfactory. Conservative ovarian surgery offers excellent results provided that the ovarian circulation be not impaired and that the organ be left in a good position. This is strikingly exemplified in the writers' series of forty-eight double salpingectomies when one or both ovaries were spared, none of these cases requiring a second operation. In selected cases, ovarian resection offers excellent results. A small amount of ovarian tissue left behind will usually avert the sudden onset of the menopause. The reason many resected ovaries become cystic is because of interference of the blood supply. When it is found necessary to remove both ovaries a hysterectomy should also be performed. Such uteri are useless and often cause subsequent trouble. If it is necessary to remove the uterus, and one or both ovaries can be spared, their preservation will prevent the unpleasant symptoms of the artificial menopause. For although menstruation will cease, the neuroses, which are the worst symptoms of the menopause, will be absent. Regarding the conservative surgical treatment of uterine myomata the writers say that hysteromyomectomy is the operation of choice in the great majority of cases. Whenever performing this operation upon menstruating women both ovaries should, if possible, be spared. It is of the utmost importance that the operation be so performed that the ovarian blood supply is not interfered with and that the ovaries be left in good position. If it is impossible to carry out these two points with certainty, the ovaries should be removed, as under such circumstances cystic degeneration and other distressing symptoms will arise. By performing a hysteromyomectomy and leaving one or both ovaries, the severe symptoms of the artificial menopause will be averted. If it is possible to amputate across the cervix at such a level as to leave behind corporeal endometrium, scant but regular menstruation will usually follow. Even though amenorrhea be present the neurosis and other unpleasant symptoms of the artificial menopause will be averted if one ovary be left behind. In a series of seventy-five hysteromyomectomies in which one or both ovaries were spared there was but one patient who complained of symptoms arising from the artificial menopause. Myomectomy is the operation of choice for young women. Its chief advantage over hysteromyomectomy is that the possibility of pregnancy is preserved. Its relative danger as compared with hysterectomy depends on the individual case. Large multiple intramural myomata which make it necessary to greatly mutilate the uterus and to open the endometrial cavity increase the dangers of myomectomy. The presence of inflammatory lesions in the pelvis add greatly to the dangers of in-

section. Small intramural myomata may always escape detection and by their subsequent growth make a second operation necessary.

Desmoid Tumors.—R. Morrison and H. Drummond (*Lancet*, 1910, 1336) say that there are certain tumors—desmoids—originating in the abdominal wall, chiefly in the upper half of the rectus muscle, but also in connection with the other muscles, which are of considerable clinical importance. They are likely to be mistaken for growths in the abdomen, unless the possibility of their occurrence is remembered. Their association with pregnancy is so frequent as to constitute more than a coincidence. Possibly traumatism, by muscle stretching or tearing, is of etiological significance. A firm, but not tender, sausage-shaped tumor, possessed of some mobility, across but not in the direction of the fibers of the relaxed muscle with which it appears to be associated, becoming fixed when that muscle is made tense and occurring in a woman recently pregnant, is a desmoid tumor. The treatment is to excise the growth at once, along with a free margin of the surrounding structures, including the peritoneum underlying it. They report seven illustrative cases.

Periodic Intermenstrual Pain.—This study by N. S. Heaney (*Surg. Gyn., Obst.*, 1910, xi, 361) is based upon sixty-six cases, of which three are personal, thirty-seven cited by Rosner, and twenty-six collected from the literature. In twenty-nine cases reviewed, laparotomy is recorded six times and five times a fibroid uterus was found. In these six cases the ovaries were found affected six times. The high percentage of fibroids among the operated cases is especially worthy of note while the increased volume among Rosner's cases is highly suggestive of fibroid disease. Many theories as to the essential cause of periodic intermenstrual pain have been advanced. These are outlined by the writer. As to what evidence has been offered by the advocates of the theory that periodic intermenstrual pain is due to painful ovulation, that ovulation occurs at this time he says that no operative findings have been offered, only that the pain is periodic, and, since the pain does not coincide with menstruation, then the only other periodic occurrence is assumed to be ovulation. So far as ascertainable the author's case is the only one operated on during an attack, and the condition of the ovary noted; a recent corpus luteum was found. The pain began always in the right side and that side was tender to bimanual examination three times at intervals, yet the corpus luteum was on the opposite side. Where both ovaries are present, ovulation occurs most probably in them in rotation, yet in cases of periodic intermenstrual pain, the pain always begins in the same side. The writer asks what, with ovulation as an explanation, is the cause for the leukorrheal or bloody discharge which occasionally accompanies the intermenstrual pain? He says it could hardly be called accidental that in the six operated cases six pairs of markedly sclerotic and cystic ovaries and five fibromyomata of the uterus were found.

It is not at all infrequent, especially among patients with such a pathology, to see the menstrual type change so that a woman who previously was regular may begin menstruating every two weeks. We have no evidence to show that ovulation is equally frequent, yet there must be some abnormal stimulus at work in these cases, whether mechanical, chemical or nervous. Not infrequently in such cases the periods alternate in the quantity of the discharge, so that one period will be sufficient while the next is scanty and painful. Such a case menstruating every two weeks might easily come under the classification of mittelschmerz with a bloody discharge. One might say that here the impulse was too weak to cause a typical menstruation. If the impulse were still weaker the stimulation to the uterus might be sufficient only to produce a leukorrheal discharge. In other words, in the writers opinion, periodic intermenstrual pain is an insufficient or abortive attempt at menstruation, the pain being a dysmenorrhea and the whole picture depending upon degenerative and sclerotic conditions in the ovaries and uterus. This theory would explain the finding of an endometrium typical of beginning menstruation in his case operated on at the height of an attack of periodic intermenstrual pain.

Oil in the Treatment of Postoperative Abdominal Adhesions.—W. G. Crump (*Surg., Gyn., Obst.*, 1910, xi, 491) says that an ideal oil for this purpose should be readily obtainable, neutral in reaction and thus nonirritating to serous membranes, nontoxic, readily sterilized without material change in composition, highly lubricating so as to facilitate easy readjustment of the viscera and early peristalsis and slow in absorption, thus permitting of tissue repair ere it is taken up by the system. It should be eventually metabolized and thus removed after it has acted out its part, should facilitate free drainage of the abdominal cavity, and inhibit bacterial growth or preferably be germicidal. Above all, it should prevent postoperative peritoneal agglutinations and the formation of adhesions. These requirements the writer thinks are best fulfilled by an oil made from the fresh fat from the omentum and appendices epiploicæ of cattle, the preparation of which he describes. He recommends its use in cases where there has been excessive handling of the abdominal viscera, in all cases where adhesions are present or feared, in cases where there have remained extensive uncovered raw surfaces, in all septic cases to favor free abdominal drainage either to the pelvis or drainage tracts, in conservative operations on the pelvic organs, especially where it is desired to obtain patulous tubes. He avoids giving cool enemata or the application of ice-bags to the abdomen, as the oil readily stiffens up whatever the temperature is reduced below that of body temperature. In all bad pelvic and pus cases, it is essential to gravitate the oil to the lower part of the abdominal cavity, in which place it is most useful and where its absorption is longest delayed. The patients are therefore kept in the Fowler position for, usually, from seven to ten days.

Deceptive Form of Appendicitis in Women.—H. S. Crossen (*Surg., Gyn., Obst.*, 1910, xi, 196) records two cases under this title not because it does not occur in men but because it is more deceptive in women on account of the location of the mass in the tubo-ovarian region. The appendicial mass is apparently intracecal. Each patient was sick for several months and quite a mass had formed before any acute symptoms appeared, and even when they did appear they were comparatively mild. So marked was this feature that the mass, in connection with the history, gave the impression of a newgrowth. This is accounted for in a measure by the extreme chronicity of the inflammation and also by its inclusion in the cecal wall. The apparently intracecal situation of the mass was a striking feature and was due to the folding of the cecal wall about the chronically inflamed appendix. Because of the special relation of the appendix to the cecum, or because of the chronicity of the low grade inflammation, or both, the infiltration and adhesions affected principally the wall of the cecum adjacent to the inflamed appendix. The appendix was not hidden by adhesions binding the cecum to the posterior abdominal wall, for the cecum and mass were movable and could be lifted about freely after a few pelvic adhesions were broken. Neither was it hidden by being retroperitoneal. Microscopic examination of the appendix showed that it had its regular peritoneal covering, practically encircling it, hence it was not retroperitoneal. The appendix was hidden by being buried in the overlapped cecal wall. Unless carefully investigated, such a condition might be treated by extirpation of the cecum, under the mistaken supposition that the mass was a tumor of the cecum. This peculiarity helps to account also for the dislocation of the mass. As the cecum with its contained mass was movable, it naturally dropped downward into the tubo-ovarian region. Later, adhesions formed, fixing it in that abnormal location. Evidently the cecum in this type of cases is more than ordinarily movable, the unusual mobility being due to the high reflection of the peritoneum on its posterior wall. This complete envelopment of the cecum by peritoneum also favors the extensive infolding of the wall.

Pelvic Metastases in Cancer of the Upper Abdominal Organs.—Ch. Lenormant (*Presse Méd.*, Oct. 29, 1910) says that it is found that in many cancers of the upper abdominal organs, after operation, the apparent cure for some months or years, there is a cancerous involvement of the ovaries, bilateral, rapidly growing, and of very malignant type. The question of interest here is in what way the infection was carried from the original seat of the growth to the pelvis. The hypothesis that the cells were carried by the blood is hardly tenable, while that of the lymphatic metastasis has been supported by several authors. An attempt has been made by Kraus and Polano to show experimentally that solid particles, such as india ink, injected into the peritoneal cavity are absorbed through the intact ovarian covering. Another fact bearing on this subject is that metastases to the organs of the

posterior culdesac are even more frequent than those of the ovaries. The rectum, especially in men, is often affected in cases where there is no ulceration in the stomach or intestines. The primary tumor may be entirely latent and that of the ovaries be the one for which the patient seeks relief. From these facts we may deduce the practical conclusion that in every case of ovarian tumor we should make an examination of the organs of the upper abdomen before operating, and in every case of cancer of the stomach or pancreas we should examine the ovaries and rectum.

Diffuse Idiopathic Hypertrophy of the Mammary Glands of the Female.—A case of this condition in a girl fourteen years of age whose total weight was 106 pounds, of which the breasts were found, after removal, to contribute 28 and 26 pounds respectively, is recorded by Henry Albert (*Jour. Amer. Med. Assn.*, 1910, lv, 1339). The writer has attempted to compile and review all the reported cases. He finds seventy, in eighteen of which the enlargement occurred during gestation; most of the others occurred about the time of or soon after puberty. Of the seventy cases, sixty-two were bilateral. Fifty-eight per cent. of the cases not associated with gestation developed between the ages of eleven and sixteen and 40 per cent. during the ages of fourteen and fifteen. The etiology of the condition is obscure. It is very probably due to the action of the same hormones that produce the physiologic enlargements. Pathologically, the condition is a simple diffuse hypertrophy, involving both glands and connective elements. The increase in the gland elements occurs principally in the cases occurring during gestation, whereas the connective tissue increase usually predominates in those not associated with that condition. The process appears to be essentially an exaggeration or continuation of the enlargement that affect the gland normally at puberty and during gestation. The weight of the glands varies from $1\frac{1}{3}$ to 64 pounds. In one instance, one of the glands weighed 64 pounds and both glands 124 pounds. In two instances the combined weight of the two glands exceeded the weight of the remainder of the body. In cases associated with gestation, lactation is, as a rule, normal. In those hypertrophies not associated with gestation the glands seldom functionate, even after pregnancy.

DEPARTMENT OF PEDIATRICS.

ORIGINAL COMMUNICATIONS.

THE TREATMENT OF CONGENITAL SYPHILIS BY THE ADMINISTRATION OF 606 (SALVARSAN) TO THE NURSING MOTHER.*

BY

HENRY DWIGHT CHAPIN M. D.,

New York City.

(With plate.)

IN considering the therapeutic possibilities of a new and potent remedy we must bear in mind not only the usual course and natural history of the disease to be combatted, but the age and condition of the patient. It is well known to all physicians that the congenital form of syphilis differs widely in some respects from the same disease in the adult.

With reference to the use of 606, two factors must be kept particularly in mind: first, the blighting effect of the disease upon the infant, with the frequently resulting feebleness and atrophy; and second, a wide and abundant distribution of the spirochetæ. Both of these conditions will have to be reckoned with in the administration of this remedy. Great care will naturally be required in giving any powerful remedy to an infant with little vitality and poor resisting power. Again, the large numbers and wide distribution of the spirochetæ in congenital syphilis may prove a source of danger, as a too rapid destruction of the great number of these organisms may set free sufficient endotoxins to induce a fatal result. This may take place more readily in an atrophic infant with lowered resisting power than in a stronger subject. The spirochetæ in these

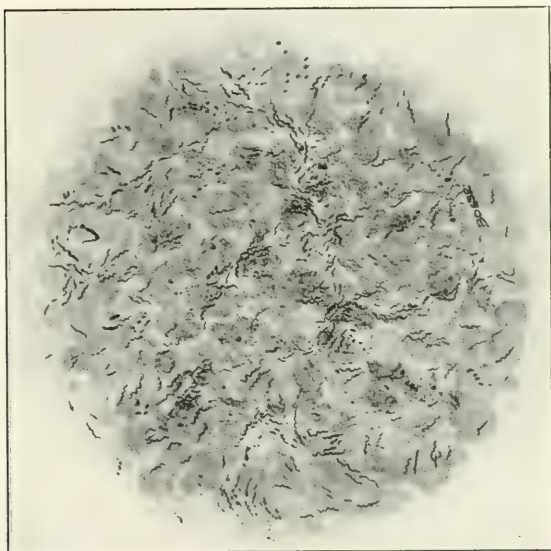
*Read before the New York County Medical Society, January 6, 1911.

cases are widely distributed, as already noted, in all the tissues of the infant's body.

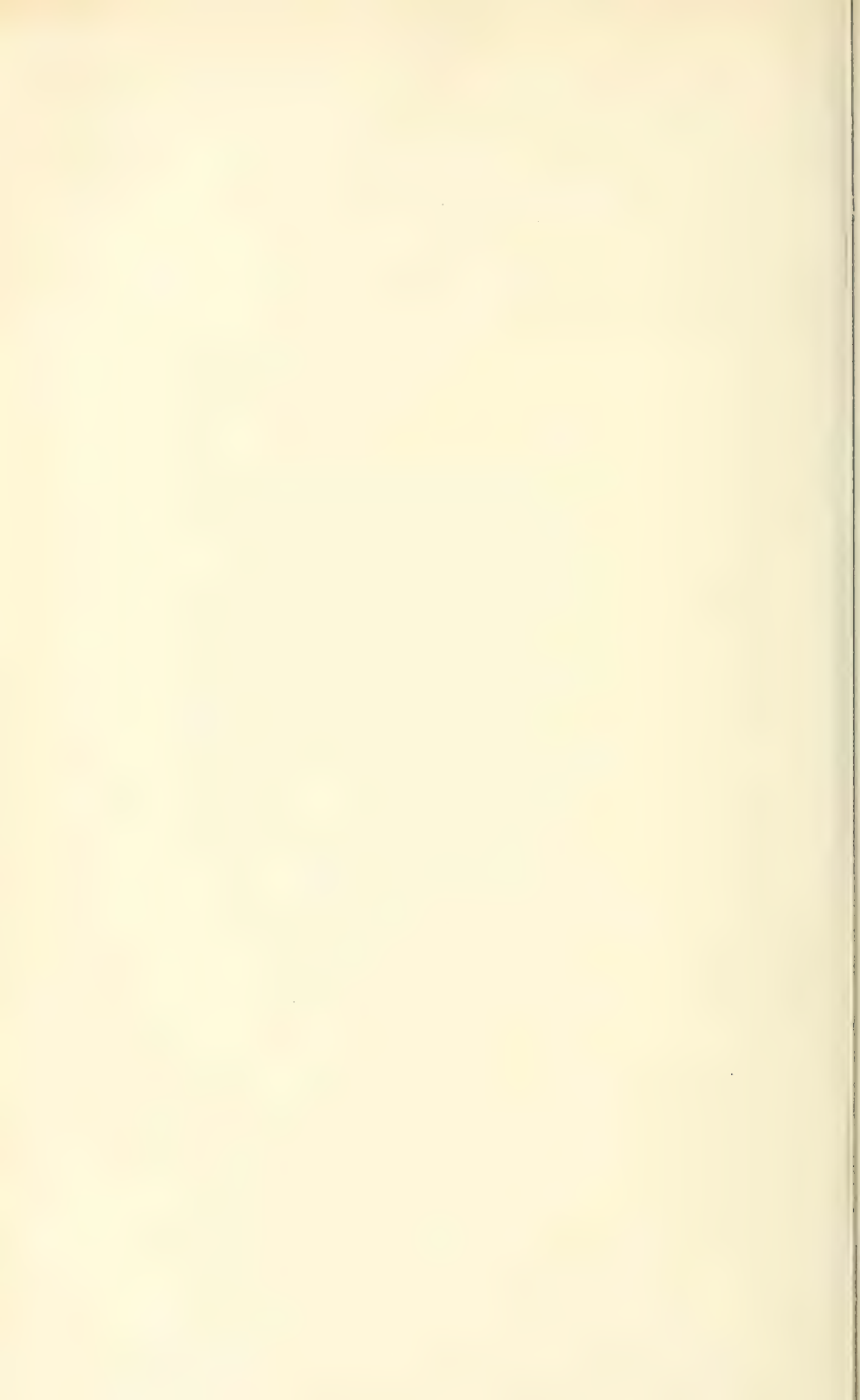
On the basis of investigations made upon 100 children and 100 placentas in which serolytic examinations had been made, K. Trinchese (*Munch. med. Woch.*, No. 11, 1910) states that the spirochetæ of syphilis occurred most abundantly in the suprarenals, then in the liver, lungs, ovaries, testes, spleen, the fetal end of the funis, and also with relative frequency in the blood. They are relatively rare in the placenta whither they enter through the blood-vessels of the villi. They readily penetrate the walls of these vessels without producing gross alterations of the tissues, enter the stroma of the villi and may even migrate to the surface of the villi; they produce decided tissue changes in the syncytium, manifested by displacement of nuclei and nodular thickening. This migratory process of the spirochetæ from the vessels of the villi through the stroma of the villi, through the surface of the villi and into the intervillous spaces is regarded by Trinchese as normal. On the other hand, it is a noteworthy fact that detection of the spirochetæ in the blood of adult syphilitics is very difficult.

It is evident that the question of spirochetæ, as far as numbers and distribution are concerned in congenital syphilis, may have great importance in the consideration of the special forms of treatment. The following cut shows the great numbers of spirochetæ in a section of the liver, occurring in an infant six weeks old suffering from congenital syphilis that was recently treated in the writer's service at the hospital.

Two methods of administering 606 to syphilitic infants have been employed; first, by injecting the nursing mother and allowing the infant to be influenced by the milk ingested by suckling; and, second, by directly injecting the infant. Several reports have already been made of the first method. Dr. Von Taege (*Munch. med. Woch.*, No. 33, 1910) injected a syphilitic mother with 0.3 gm. of 606 ten days after the birth of her infant. The infant at birth weighed 2400 gm. It was well developed but appeared apathetic and did not take the breast well. On the ninth day pemphigus and paronychia of some of the fingers appeared and on the following day, as already noted, the mother was injected. During the first two days the condition of the child became worse, but on the third day after the treatment of the mother the infant began to improve and the syphilitic



SECTION OF LIVER FROM SYPHILITIC INFANT, SHOWING LARGE
NUMBERS OF SPIROCHETÆ.—(CHAPIN.)



symptoms rapidly disappeared. The gray faded color gave place to a normal red tinge and the infant took the breast with vigor.

Dr. R. Duhot (*Münch. med. Woch.*, No. 35, 1910) reports the case of a mother twenty-two years old who was infected by her husband. She was treated with mercurial injections and inunctions but developed several deep syphilitic ulcers. About a year and a half after infection she gave birth to an infant weighing 2900 gm. The child at once showed all the common symptoms of congenital syphilis, and in twenty-one days only gained 21 gm. The mother was then given 0.5 gm. of 606 and on the following day a second injection of 0.45 gm. In twelve days the deep syphilitic ulcers of the mother were practically healed. But still more astonishing was the fact that on the third day after the injection of the mother the infant began to improve. The nasal catarrh vanished, the efflorescences and papules disappeared, and the skin took on a natural color. The infant gradually took the breast and gained 500 gm. during the first week after the mother's injection, 400 gm. in the second week, and 300 gm. in the third week, a total of 1200 gm. in contrast to the 100 gm. during the three weeks before injection. The infant never received any treatment with mercury.

Dr. Rosenthal (*Berl. klin. Woch.*, November 21, 1910) reports a case of hereditary syphilis in which an injection of 606 was given to a nursing mother without being followed by any improvement in the infant. On the contrary, the symptoms in the child became worse, so that it was necessary to resort to the familiar treatment with mercury which gave satisfactory results.

That this remedy injected into the nursing mother will have an effect upon the suckling infant is shown by the following case that came into the service of Dr. Dennett of my staff at the Post-Graduate Hospital in which results were confirmed by blood tests.

John G., aged six weeks, the first child, was brought to the dispensary November 25, 1910. Parents had been married for three years. Both mother and father denied venereal disease. There were no miscarriages. This is the second marriage of the father and there were no children by his first wife. The labor was normal (twenty-four hours) at full term and the baby's weight at birth was 8 pounds. Soon after the birth of the child the physician in attendance told the mother that the baby

had syphilis. Snuffles was marked and on the second day it was noticed that the baby had an eruption on the face consisting of a suspicious macular rash about the mouth extending over to the cheek and a few days later small white sores appeared in the mouth. At the end of a week an eruption appeared on the buttocks. The buttocks and scrotum were excoriated from birth. Although the baby had the breast from the first, it vomited a great deal. The bowels moved eight or ten times a day, being watery-green in character but no curds, mucus or blood. The baby was very fretful, crying a great deal and sleeping little. A physical examination at the dispensary showed a small emaciated infant weighing 6 1/2 pounds. The face was of the Mongolian type, flat in shape with slanting eyes and protruding tongue. There was a ham colored scaling macular syphilide upon the skin and cheeks, and a macular eruption on the buttocks. There was marked nasal obstruction and discharge, but the mucous membranes of the mouth were normal. There was scaling of the palms of the hands, and the soles of the feet were likewise scaling and shiny. The spleen was palpable and the liver felt one inch below the costal border. Heart and lungs were negative. The skin showed evidence of poor circulation.

As this seemed a favorable case for trying the effect of 606 through the mother, a Wassermann-Noguchi test was made by Dr. Pease upon the father, mother and infant. The infant was positive, the mother was positive, although on physical examination she showed no lesions of syphilis, and the father was negative.

On December 5, the mother was injected with 0.4 gm. of 606 prepared according to the Lesser method. The dose was kindly furnished by Dr. Flexner, as the remedy was not then upon the market. The 606 was dissolved in hot water, about 15 c.c. being required. This was then made neutral or slightly alkaline by the addition of the normal solution of sodium hydroxide; 25 c.c. was the bulk prepared which was injected intramuscularly into the right buttock. Nothing notable followed as far as the mother was concerned beside local pain and a slight rise of temperature. Four days after the injection both mother and baby gave a weak positive Wassermann reaction. Seven days after injection both mother and baby were negative. The baby was entirely breast-fed and besides some regurgitation seemed to digest the milk. The stools averaged from three to five a day and were normal in appearance. The mother and child left the

hospital on December 12, the former stating that she felt better than she had in a long time, and the baby too seemed improved, having gained 3 ounces. The subsequent history, however, was not so favorable. The infant was brought to the dispensary for observation and, although still on the mother's breast, did not seem to thrive. No syphilitic lesions were detected but a gradual atrophy ensued. The mother had a good supply of milk which on examination was shown to contain 3 per cent. butter-fat, so that the breast was continued. As the baby continued to fail, on December 28 an examination of the milk was made for arsenic but none was found. Toward the last the infant did not take the breast well and suffered from simple inanition. No syphilitic symptoms, however, could be detected. The mother reported that the baby died December 31. It was difficult to decide whether the 606 had anything to do with the result. It is known that syphilitic infants do better on their mother's breast than on any artificial feeding, and, as the milk appeared good, no change was made in the food. The disappearance of the Wassermann reaction in seven days showed that the syphilis was controlled through the mother's milk by means of the injection. The baby was a Mongolian idiot which may have influenced its vitality and helped toward the final result.

The following probable explanation is advanced by Dr. Duhot as to the manner in which 606 acts through the mother's milk: The destruction of the spirochetæ in the mother sets free endotoxin which, in turn, causes the production of an antitoxin. This antitoxin goes to the infant through the milk and neutralizes the syphilitic toxin in the child. The direct result is an improvement in the symptoms. This improvement is probably not lasting but gives an opportunity for the injection of 606 to the mother without injury to the child and in this manner a possible cure may be obtained. These cases should, however, be closely followed by the Wassermann reaction which will act as a signboard to indicate a relapse.

There seems to be a difference of opinion as to the desirability of directly injecting 606 in cases of congenital syphilis. Several instances of death have been reported after the injection of 606 by European observers. On the contrary, other observers consider it advisable and safe to thus employ this remedy and report striking results from its use.

In glancing over the recent European literature upon the sub-

ject, the writer has gained the impression that Ehrlich does not advise the direct treatment. Infants so treated are apt to improve for two or three days and then die as a result of the toxins which are set free by the destruction of myriads of spirochetæ which exist in the entire body of the congenital syphilitic infant. It would seem more feasible to act on the baby by injecting the nursing mother when this is possible, hence it is desirable that all such cases should be reported with records of the blood reactions and final results. Further study under careful oversight is required before the possibilities and dangers of this powerful remedy can be determined as far as the congenital form of syphilis is concerned.

51 WEST FIFTY-FIRST STREET.

THE HISTORY OF THE TREATMENT OF CEREBRO- SPINAL MENINGITIS WITH SPECIAL REFERENCE TO THE SERUM TREATMENT.*

BY

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The historical and geographical interest of cerebrospinal meningitis is considerable. A striking feature regarding it is the fact that it has been remarkably widespread, extending at the same period of time over greatly separated portions of the civilized world, and producing serious epidemics.

The first mention of meningitis is by Mathey and Vieusseux, describing an epidemic occurring in Geneva in 1805, which in the light of later knowledge unquestionably was cerebrospinal meningitis. Between the years 1806 and 1816 there were more or less scattered epidemics in Germany, Holland, France, England, and our own country.

The United States gives fuller accounts during the same period. Here there was a widespread epidemic, including the New England states, especially Massachusetts (1814 to 1816), and other States as far west as Kentucky and Ohio. In the New England States it was generally described as "sinking typhus," or "spotted fever," on account of the petechial eruption. These descriptions gave

*Read before the Soc. of Alumni of Lebanon Hospital, December 6, 1910.

rise to considerable confusion with "fleck-fieber" or fleck typhus"—our typhus—and show that the distinctive character of the disease was not at this time appreciated.

This period from 1805 to 1830 is called by Prof. Hirsch, the great authority on "Geographical Pathology," the first of the four periods into which he divides the history of epidemic meningitis.

The second period extends from 1837 to 1850. In the former year there was a new siege of the disease in France, and at various times during the second period it occurred frequently in all parts of the country, in 1837 in the South of France, sometimes among the military and sometimes among the civilian population. From France it extended in 1840 to Algeria, which in 1846-47 was the seat of a severe epidemic which spread over the whole country.

Shortly after this invasion of France it spread epidemically through Southern Italy. In 1844 there was an epidemic in Sicily. In 1846-49, it affected the Romagna, especially attacking the French troops.

In the rest of Europe it occurred from the fourth decade on, there being a series of severe epidemics in Denmark and in Stockholm, where it seized upon the inmates of the large orphan asylums. During this decade there were also epidemics in Spain, in 1843 at Gibraltar, and in Corfu, 1840 and 1843. In Ireland it broke out in 1846, where it produced local attacks in several workhouses in Dublin, Bray, and Belfast, and in the first mentioned city there occurred a still more severe epidemic in 1850.

In Germany also the many cases of "acute hydrocephalus," and "encephalitis" reported during this time are considered by Hirsch to have been meningitis.

The disease assumed much greater proportions in America than in Europe during the period of seven years from 1843 to 1850. It manifested itself in the western and southern states and at places as remote as possible from transatlantic communication, and hundreds of miles distant from each other. The states of Tennessee and Alabama suffered greatly in 1842, and several severe epidemics occurred in Illinois in 1845. Then came Arkansas, Mississippi, Missouri in 1846 and 1847, and in 1848 it was found among the regiments stationed at New Orleans. It next appeared in virulent form in western Pennsylvania and Massachusetts.

There was then a short respite from its ravages until 1854, when we start upon the third period, lasting from 1854 to 1875.

This period is characterized not only by the extremely long duration of the epidemics, by the frequent return of the disease to infected places, but also by its almost pandemic character in invading different portions of Europe, North and South America, and places in Asia Minor and Africa. The Scandinavian Peninsula was thoroughly riddled with the infection at various times from 1854 to 1858.

There were numerous epidemics in Germany from 1863 and for three or four years afterward. Austro-Hungary was but little affected, except for an epidemic at the Vienna Orphan Asylum in 1863. Russia had only one invasion of at all remarkable dimensions in the Crimea, from 1867 to 1868, with Roumania and Turkey suffering to some extent in 1869. But Greece in the same time had various large epidemics. In the sixties, Ireland, the Netherlands, France, and Portugal were drawn into the net.

It is to Italy that we look for the next severe outbreak. In 1874 to 1876 it affected the southern provinces, including much new territory.

During the same period the United States was very firmly in the clutches of this malady. After 1856, when it appeared in several states, it returned almost yearly from 1861 to 1873. During the War, both troops and civilians fell sick in large numbers. In the following years till 1874 there were some very severe epidemics.

The intensity and extent of the infection seem to have been more severe in the United States than in the French, Swedish, German, and other epidemics.

From 1876 there was a steady subsidence all over the world, the disease occurring only in limited districts, in isolated cities. But Jaeger says meningitis has increased considerably in the German army since 1884, as well as in the Austrian and Italian armies. This may be partly attributable, in Germany at least, to the greater stringency of the requirements for reporting cases.

In 1887 and 1889 there was an unusually widespread occurrence of the disease in Norway; in 1870 epidemics in Sweden occurred, and in 1896-7 in several of the cities of the United States, Boston especially. Finally comes the last and greatest epidemic of 1905 in New York City—perhaps the most severe single epidemic in the history of the disease.

I have here reported all the important epidemics of which I could find any record. I have gone thus into detail concerning

the history, because I want to point out how frequent and widespread the epidemics have been; how the disease has often returned to the same districts at short intervals, how virulent some of the outbreaks have been, and, furthermore, how little all the previously known and employed methods of treatment have been able to prevent a return of the epidemics.

To speak of the history of the treatment of cerebrospinal meningitis is like speaking of the history of a happy nation, whose "annals" are proverbially brief. While there has been no cause to complain of the multiplicity of means employed in the past, there never has been any satisfactory proof that any of the methods resorted to have been instrumental in lowering the mortality, which has always been exceedingly high, or in shortening the course of the individual cases, or in weakening the force of an epidemic, or in preventing the distressing sequelæ in many of those patients who had the misfortune to survive, burdened with mental and physical defects which often enough were worse than death itself.

For there has been no real treatment in the true sense of the word; that is, treatment directed toward the specific nature of the disease. The therapy has been empirical and symptomatic. As far as drug treatment is concerned, there is hardly any disease in which a choicer and more varied collection of drugs has been used, and certainly none in which the futility of such measures has been more clearly demonstrated.

From 1805 on, when the disease was first described, and when drugs were prescribed much oftener and more indiscriminately than at present, it is not apparent, in the history of any single epidemic, or even in sporadic cases, that any of the drugs employed in great profusion and variety have had any permanent effect or have done more than temporarily to relieve some of the symptoms. There is certainly no drug, no matter how early it is given, which has ever aborted the affection, and none which has ever succeeded in cutting it short. It would serve but little purpose to compile a long list of these pharmaceutical failures but I shall mention two, used in recent years, both of which have been for a time widely heralded as specifics, and have then gone on to sleep with their ancestors in the therapeutic graveyard.

About seven years ago a Portuguese observer wrote a paper on spinal injections of lysol solution in cerebrospinal meningitis, with reports of cases. This method was enthusiastically taken

up in various places, among others being tried, I believe, in some of the New York hospitals; but it was not productive of permanent results and is to-day abandoned.

The other drug is collargolum, or colloidal silver, which was for a time, I believe, extensively used, particularly in Europe. Netter reports a series of fifteen cases treated in this way, with six deaths; but an examination of his paper did not convince me that the nine cases that survived were at all favorably influenced by this drug. Examination of other records of this treatment gives similar results.

So much for the drug treatment, and the less said the better. Now we have to mention that curious aberration, the treatment with diphtheritic antitoxin. This was first tried at a Hartford Hospital, and the results seemed to the originators of this treatment so promising, although but very few cases were so treated, that with the unfortunate tendency of many clinicians to generalize from a few observations, and to rush into print on the slightest provocation, this treatment was recommended for general adoption. Just why diphtheria antitoxin, considering the absolute lack of relationship between Loeffler's bacillus and the diplococcus intracellularis, should have any particular effect, benign or otherwise, on epidemic meningitis, it would be hard to say. The search for a curative serum, which began almost with the discovery of the diplococcus of Weichselbaum, and about which we shall have more to say in a moment, certainly did not lie in the direction of the antidiphtheritic serum. At any rate, the treatment was widely used, particularly in 1906, by most competent men, both in Europe and America. A number of cures were reported, especially by French observers, such as Blanc and others, which were attributed to the serum, but the evidence is not sufficient. The great French authority Netter has reviewed the literature of the diphtheria antitoxin treatment and his statistics are damning and incontrovertible, and show its utter inefficiency.

Before going on to discuss the history of the serum treatment, it remains to speak of one modern measure which gave promise of considerable usefulness, and although it has disappointed the sanguine it certainly deserves very honorable mention. This is the operation of lumbar puncture, first performed and described by Quincke of Kiel, in 1891. Since then it has been used on numberless occasions, and we shall find that it is an important

preliminary step in the serum treatment. There is no question at all that many cases have been greatly improved under lumbar puncture. In relieving the condition of dangerous intracranial pressure that exists in many patients, lumbar puncture has certainly often done life-saving work, even if the procedure itself can hardly be said to exert any direct influence upon the disease as such. But unfortunately the pressure has not always been permanently relieved, and in other ways also lumbar puncture failed to show itself the specific treatment for which we have all been waiting.

As regards other methods of treatment, there is but little to say. In the earlier epidemics, conformably to the medicine of the day, blood-letting was freely employed, but with little measure of success. There have been a large variety of therapeutic agents employed for the relief of symptoms, such as local depletion by leeches or cups, vesication of the temples or spine, etc. As Ormerod correctly observed, "All such heroic measures in the way of bleeding, purgatives, emetics, mercurialization, and the like, were contraindicated by the tendency to depression and collapse which may exist from the very outset."

With the discovery in 1887 of the diplococcus intracellularis by Weichselbaum, and the subsequent demonstration that this, and this only, is the causative agent of epidemic meningitis, the history of the disease enters into a new phase. Almost from the date of this discovery, there were some clinicians and pathologists who were impressed with the fact that only in the finding of an immune serum or antitoxin did any hope lie of conquering this dread affection. But these ideas did not take definite shape until a few years ago, when a number of men both in Europe and in this country started experiments with a view to discovering ultimately a specific for meningitis.

It is a remarkable coincidence, but still one not so rare among scientists, that several observers widely separated should have done this work simultaneously, though quite independently, and all have discovered a serum about the same time.

In the *Deutsche Med. Wochenschrift* of April 19, 1906, Kolle and Wasserman wrote a paper describing their efforts to produce a serum and to determine its nature. They say that previous efforts to make a serum had not led to practical results, because the experimenter had confined themselves to the treatment of small laboratory animals only. Likewise nothing positive could

be predicated of the derived serum because no proper procedure was known for testing the serum on animals. Previous to this, Bonhoff had obtained a serum which seems to have had a certain immunizing value, but from his experiments and those of Lepierre one cannot decide whether the control animals died of infection or intoxication.

Kolle and Wasserman found, like Jaeger before them, that in immunizing rabbits and horses with diplococci agglutinins were formed in the blood-serum. Löhlein of Wassermann's laboratory proved that meningococcic serum of animals was always much more strongly bacteriotropic than normal serum of the same animals.

Kolle and Wasserman used horses for their experiments, because the horse had been found most suitable for obtaining highly valent serum in previous immunizing attempts, and because experiments with goats and asses had been barren of results. The horses were treated with pure cultures of cocci from fluid obtained by lumbar puncture of typical cases during the epidemic in Silesia in 1905-6.

It was considered essential, if the serum was to be used in practice, to determine exactly its content of specific protective substances. Finally, after many experiments, which they fully describe, they succeeded in showing that when horses are injected with large doses of meningococci, not only agglutinins and bacteriotropins are formed, but specific substances, that both *in vitro* and in the body of animals, demonstrated their efficacy, and could only be amboceptors. Of course, this serum was first used therapeutically on animals, but Kolle and Wasserman then thought of the possibility of its use on the human subject, both for prophylaxis and for cure, although they were more inclined to attempt the latter, as they expected to derive more information from its use in the sick. They insist, however, that every immune serum that has achieved therapeutic success had also prophylactic properties.

This Kolle-Wasserman serum is the one most used in Germany. It was also widely used in France, but was later to a large extent superseded by the serum of the Frenchman, Dopter, and by Flexner's serum. Kolle and Wasserman described the technic of employing the serum, and in this first paper recommended that it be injected subcutaneously. Later, however, they realized that this method was worthless, as the mortality rate

remained practically undiminished, and they changed to the method of spinal injection, after lumbar puncture, as the only one likely to yield results. The reasons for this we shall discuss later, in speaking of the technic and the statistics of the serum treatment.

In the same journal, Jochman described his attempts to produce a serum. He succeeded in producing a polyvalent serum which contained immune substances. This was next tested on human subjects at the time of the large epidemic in Silesia in 1905. Up to May, 1906, the date of his paper, forty cases had been treated, but only one-half of these were really of value in determining the usefulness of the serum, because, of course, there was no previous experience in dosage or manner of injection. He discovered that only large doses were of any use and that where there was already hydrocephalus, even large doses would fail, but wherever cases were treated very early, and with large doses from the beginning, Jochmann received the clear impression that the serum produced distinct changes for the better. He likewise demonstrated that no harm was done by the injection itself. So that at that date he already considered the treatment a rather promising one. We must remember that this is very early in the history of practical serotherapy in meningitis.

A serum was also produced in Germany by Ruppel, but of these three, the Kolle-Wasserman was by far the most widely used.

Still another serum of about this time is that of Dopter of France. Of the origin of this serum I can find no account, but it was largely used in France in conjunction with Flexner's serum, which to some extent superseded it.

But of all the work done in connection with the serotherapy of meningitis, certainly the most important was done in this country by our distinguished countryman, Simon Flexner, and his associates.

As we all know, in the winter of 1904 and the spring of 1905, New York City was afflicted with the most terrible epidemic in the history of the disease, 4,000 cases being reported, with a mortality of 85 per cent. In 1905, the New York Health Department appointed a Commission to investigate this disease and to devise proper measures against it. Flexner, as a member of this Commission, undertook the work of studying the pathogenic properties of *diplococcus intracellularis* and the immunization of

animals with a view to obtaining immune sera. In a paper entitled "Contributions to the Biology of the *Diplococcus Intracellularis*," he brought out the interesting fact of the brief vitality of the diplococcus in cultures, which was not due to exhaustion of the medium or to accumulation of products. He showed that the organism was very susceptible to injurious influences, such as cold or suspension in salt solution, and tends to disintegrate rapidly.

In a second paper called "Experimental Meningitis in Monkeys," Flexner describes a condition produced by injecting the spinal canal of monkeys with diplococcus cultures obtained from typical cases of meningitis. This condition closely resembled human meningitis. Of course the discovery of this similarity of the two conditions was of great importance in experimental work to produce a curative serum.

In his third paper "Concerning Serum Therapy for Experimental Infection with *Diplococcus Intracellularis*," Flexner describes the method of trying to produce the serum. The disease is of such a character that an antiserum seemed the only hope, which was not great because the pathological effects were due to endotoxic constituents of the meningococcus. The main question was whether the quantity of antibody which could be produced would suffice to neutralize enough poison to influence the result of infection, and of this he did not appear to be confident.

Other conditions, however, increased the hope of a favorable result. Some of his facts suggested the possibility that restraint of growth at some periods in the course of the infection might be more important than the neutralization of free endotoxin, chiefly the fact of the great susceptibility of these germs to unfavorable influences. Further, the lesions of the disease were limited to localities where they can be brought directly into the clutches of the curative agent, and Flexner from the first employed direct injection into the spinal canal, and wasted no time with subcutaneous injections.

An immune serum was first prepared from rabbits, goats, and monkeys, immunized by injection of various strains of diplococci and with exudates from the peritoneal cavity of the guinea-pig. Rabbit serum proved poisonous for small guinea-pigs, but still it seemed to have protective power. Goat serum was beneficial in guinea-pigs, but not in monkeys. The best results were obtained with antiserum from large monkeys, which had marked protect-

ive power when used in the spinal canal of small monkeys that had been experimentally infected. This serum was, however, not obtainable in sufficient quantity for use in man, and Flexner then began to immunize horses. At first he used subcutaneous injections of diplococcus cultures heated to 60° C. for thirty minutes. Different strains were used. Doses were gradually increased and when a certain dose was reached, intravenous inoculation was used instead. Finally this method was discontinued and subcutaneous injections of living and dead cultures were employed at seven-day intervals.

A horse requires about eight months to produce a serum containing the maximum amount of antibody. After this stage the horse is bled at intervals to obtain this serum. It is kept at the proper stage as regards the amount of antibody by continuing subcutaneous injections of living and dead cultures of diplococci alternately.

Everyone knows with what brilliant success these experiments met. In this paper, in the *Jour. of Experimental Medicine*, 1907, Flexner is still doubtful whether a serum even if successful in monkeys would have any effect on man, but the serum obtained seemed to warrant a trial in the human subject, and the first Flexner serum was used in an epidemic in Ohio. It is not too much to say that, no matter what the ultimate fate of the serum itself, this remarkable work is an epoch-making chapter of medical history, and will tend to reflect lasting credit upon American medicine.

This brings the history of meningitic serotherapy practically up to the present day. Of the various sera, that of Flexner has been employed in by far the largest number of cases, and as far as statistics show, with apparently the best results.

Let me here give a short history of the different technics employed. We have seen that Kolle and Wasserman first advised subcutaneous injection, but discouraged by the results obtained, later recommended subdural injections. The reason for this is not far to seek. Meningococcic antiserum is not an antitoxin, but a bactericide—a bacteriolysin. The more nearly, therefore, it is brought into direct contact with the lesions of the disease, and the more concentrated the serum, the better the effects. Subcutaneous injection diluted the serum and did not enable the serum to reach the real point of attack.

Robb of Belfast used subcutaneous injection in seventy-nine

cases with the Wasserman, Jochmann, Ruppel, and Burroughs-Welcome sera, and had a mortality of 74 per cent., *i.e.*, just as before the serum treatment. Flexner and Dunn insisted upon the subdural route from the beginning and all observers now agree on the subdural injection, but lumbar puncture must first be used, and an amount of fluid removed equal in amount to the fluid to be injected. Trèmolieres points out the following advantages of this procedure: a, it removes from the canal more toxic substances; b, it produces a certain amount of decompression of the nerve-centers; c, the curative serum is less diluted.

In very bad cases it may even be possible to drain the ventricles and insert the serum intra-ventricularly, according to the method of Cushing and Sladen.

There is no one who has more nearly perfected the technic of administration than Dunn, of Boston. He described this in full in an article in the *Boston Medical and Surgical Journal* in 1908, and in a comprehensive paper on the whole subject reprinted in many medical journals. He says, perform lumbar puncture and be prepared to give the serum (by serum he means always Flexner's serum) as soon as meningitis is suspected. If the fluid is cloudy, give the first full dose at once, without waiting for a bacteriological examination, although further doses are only to be given in case diplococci are found in the cerebrospinal fluid. (As we know, the serum is of no value in other forms of meningitis than the epidemic form.)

Secondly, at every dose give as much as possible; .30 c.c. should be given in all cases where 30 c.c. or less cerebrospinal fluid has been withdrawn. In all cases where the amount of fluid withdrawn is more than 30 c.c. he recommends giving as much serum as the quantity withdrawn. In very severe and fulminating cases 45 c.c. should be administered without regard to the amount of fluid removed, unless an abnormal resistance is encountered.

We thus see that Dunn and others are in favor of full doses, about 30 c.c. being the average. It was the failure, through lack of previous experience in the early history of the serum treatment, to give these full doses that kept the death-rate high.

Third, in very severe or fulminating cases the injection should be repeated after the first twenty-four hours, as soon as the symptoms begin to get worse again, or where the condition remains stationary after the first twelve hours.

Fourth, in the average cases, full doses should be injected daily for four days. If diplococci still persist after this number

of injections, the injections should be continued until they disappear.

Fifth, if the subjective symptoms persist, or high temperature or mental impairment, after the diplococci have disappeared, or if after four full doses there is no progress, wait four days if the condition is stationary, and repeat the four injections. If, however, the symptoms intensify in the meantime resume the injections immediately.

Sixth, if there is a relapse, shown either by fresh diplococci in the lumbar fluid or by a reappearance of the symptoms, repeat the four doses at twenty-four-hour intervals and conduct the subsequent treatment as for the original attack.

Seventh, treatment in these cases should be continued until the patient is symptom free, or the organisms disappear from the cerebrospinal fluid.

Eighth, if the chronic stage supervenes, watch for reappearance of the diplococci by doing occasional lumbar punctures. If the germs reappear, resume the serum treatment as just outlined. When hydrocephalus is once present, serum injections into the spinal canal are of little benefit.

(It is, of course, needless to add that these manipulations should be performed only under the most rigid antiseptic precautions).

This sketch emphasizes all the essential points of the treatment—the lumbar puncture and examination of the obtained fluid, the subdural injection of the serum, the large dosage, the repetition of the injections at frequent intervals.

This method meets with the approval of all the great European authorities like Kolle and Wasserman, Jochman, Dopter, Netter, and others, some of whom had at first advocated subcutaneous or intravenous injections, or had neglected to carry out other details of the plan, but who, with increased experience, came around to this way of thinking.

It now remains for us to say something of the records of accomplished results. And first, before approaching such a study, there are several facts that must be borne in mind. The epidemic in this country had greatly receded, that in Germany was at an end, and only in France and in Great Britain were there epidemics of any magnitude when the serum was first used to any extent, so that the conservative might perhaps declare that the serum treatment has not been subjected to the most exacting tests. Again, the number of collected cases is so far only about eight or nine

hundred, and while this is a respectable figure, it is not large enough to permit us to consider the matter as definitely settled. It must be remembered, too, that we were sailing through unknown waters, with no compass to point the way, and that experience had first to be gained in the manner of employing this treatment with regard to proper dosage and the mode and site of injection. Even as late as June, 1909, in his paper before the American Medical Association on the "Present Status of Serum Therapy of Epidemic Cerebrospinal Meningitis," Flexner takes pains to say that he "should still advise caution in concluding that the case had been proved for the serum." Nevertheless, taking the conditions as they are, the results obtained can be declared little short of marvelous, and the unanimity of opinion as to the efficacy of the serum treatment exceedingly striking and almost unique in medical annals, the pages of which seldom oblige us with unanimity on anything.

I have examined all the statistics available and shall now give the obtained results. These must be interpreted in the light of the conditions mentioned above. Before 1906, the lowest death-rate for this disease in any one year was 58 per cent. and it varied from 58 to over 80 per cent. The first results were already of a very promising character and the cases treated by the Flexner serum in 1907 showed a mortality of only 19 per cent. Jochmann in 1906 treated seventeen cases of the epidemic in Ratibor, mostly children sick not more than seven days. Of these there were five deaths, a mortality of only 29 per cent., and of these five three were children with hydrocephalus.

The largest collection of cases so far described in any one paper is in the article by Flexner and Jobling in the *Journal of Experimental Medicine* for September, 1908, entitled, "An Analysis of 400 Cases of Epidemic Meningitis Treated with the Antimeningococcic serum." These cases are mostly from the United States, but include about ten from Canada, seventy-one treated by Robb of Belfast, Ireland, at the Purdysburn and Union Hospitals, and twenty-seven cases by Ker of Edinburgh. These cases are analyzed by age, duration of the disease, time when first injected, total amount injected, and type of disease. There are altogether 421 cases, of which forty-three are excluded from analysis because they were practically moribund when first admitted or injected, and survived the first injection less than twenty-four hours. This leaves 393 cases of which ninety-eight died, a mortality of 25 per cent. This, without any further analysis, is already an unheard-

of showing. But on further examination these figures become still more striking. This disease has always been regarded as uniformly fatal in children under one year. In his article on Epidemic Meningitis in Osler's Modern Medicine, Koplik states that of twenty-seven cases that he saw under one year of age, twenty died and three were discharged in a condition of chronic hydrocephalus. Yet the Flexner tabulation shows that of twenty-two such children, eleven recovered, 50 per cent.; and of the eleven that died, ten were already ill three weeks or more, and six had well-marked hydrocephalus, and only one case was in the first week of the disease at the time of first injection. Such results as these are, of course, the most suggestive and encouraging of all.

Analyzed according to the period of injection, of 123 cases injected from the first to the third day, only 16 died, a mortality of 16 per cent; of 126 injected from fourth to seventh day, thirty died, or twenty-four per cent; of 112 injected later than this, thirty-nine died or thirty-five per cent. This shows the very great advantage and the much better prognosis obtained in cases injected very early.

In the *Bulletins et Mémoires de la Société des Hopitals de Paris* in 1909, Dopfer collects 196 cases with a total mortality of thirty-one or 15 per cent., but from these thirty-one he deducts ten cases injected when moribund, and two whose death was due to other causes after the meningitis had completely subsided, leaving nineteen deaths in 186 cases, 10 per cent. Dopfer used Flexner's serum and his own. In the same journal Teissier reports twenty-three cases, of which six died, or about 25 per cent. Of these six, three were very late cases. Comby, in the same place, mentions ten cases with one death or 10 per cent.

In the *Sperimentale of Florence*, 1909, Francioni accounts for fifteen cases, of which three died, or 20 per cent.

In the *Medical Record* for October 31, 1908, Koplik reports thirteen cases injected with serum, of whom only two died, or 15 per cent. These results certainly entitle him to say that the "serum treatment makes a decidedly good impression."

In the *Journal of Nervous and Mental Diseases*, in 1909, Flexner collects 523 cases which, including the fulminating cases, gave a gross mortality of 29.6 per cent.

Harris, in the *St. Louis Medical Review*, 1909, describes fourteen cases, of whom two died or 14 per cent. In none of the twelve

successful cases had he been able to cultivate the diplococci after the first injection.

Velten, in the *Archives Militaires*, 1909, gives twenty cases, with seventeen recoveries, a mortality of 15 per cent.

In the *Muench Med. Woch.*, 1908, Leick reports thirty-four cases treated with the Kolle-Wasserman serum, with a gross mortality of eleven or 32 per cent. But of these eleven five were moribund, four dying on the same day, which would give a net mortality of 20 per cent.

Dopter, in the *Annales de l'Institut Pasteur*, of Paris, 1910, gives seventy-seven cases with twenty deaths, or 26 per cent.

I do not wish to run the risk of tiring you with further statistics, and those quoted ought to be sufficient to show the nature of the remarkable results obtained. To my mind they bid fair radically to alter the hitherto gloomy aspect of cerebrospinal meningitis.

I can do no better in ending than to quote the concluding paragraph of Flexner and Jobling's already classical paper heretofore cited: "It is our belief that the analyses presented furnish convincing proof that the antimeningococcic serum when used by the subdural method of injection, in suitable doses and at proper intervals, is capable of reducing the period of illness, and of preventing in large measure the chronic lesions and types of the infection; of bringing about complete restoration to health, in all but a very small number of the recovered, thus lessening the serious deforming and permanent consequences of meningitis, and of greatly diminishing the fatalities due to the disease."

To have accomplished such a task is to have performed a work comparable to the conquest of diphtheria and to have placed us on the high road to subjugating this implacable foe of mankind.

NERVOUS CHILDREN—THEIR CARE AND TREATMENT.

BY

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It is only within the past five years, in general, that the nervous child has been understood, or that such a thing as nervousness, *per se*, has been recognized in children, and it is only very recently that we have heard much about the nervous child. Prior to this recognition such a child has been labelled "naughty, vicious, bad, ungovernable, disciplinary, a rascal."

Medical science teaches us to look for the cause of disease, and it is our duty to discover any and all causes of nervousness in childhood. There are people to-day who ridicule this idea as absurd, or impossible, but usually these are among those least concerned with children; who know little or nothing of their natures or of the complexities of their young lives as lived to-day, and who are without the proper insight into, or sympathy with child life.

At times we are confronted with the query, "What is a nervous child?" We find the word *nervous* means: 1, pertaining to a nerve, or to nerves; 2, unduly excitable. *Nervousness* is "Morbid or undue excitability," also "a state of excessive irritability with great mental and physical unrest." These terms apply most accurately to the child with which we are to deal—one unduly excitable, and it may be excessively irritable with great mental and physical unrest.

Variations of nervousness are many, both in kind and degree. We find a child who is timid, shy, or it may be excitable, or we may have the little patient who evidences severe hysterical symptoms.

We find the *tendency* to nervousness even in children less than a year old. The child will start, perhaps cry at a slight noise. It may (barring such causes for wakefulness as errors in digestion and teething) sleep but little and waken easily. Such a child will very likely develop into an hysterical, nervous individual a few years later.

A certain amount of nervous instability is normal in active childhood, but, by close observation one may soon detect the abnormal condition; such a child becomes unduly excited over its

play, or may fly into a passion during a game. A very timid child may be considered a nervous child. There are very many such children. They are to be found in the homes of wealth and abundance quite as frequently as among the extremely poor, the main difference being in the cause of the nervousness. I think I am within safe limits when I say that in general the extremes of nervousness are to be found in the two classes mentioned, while all along the line between the extremes we find victims of this unrest and instability.

The causes are many. Almost anyone would volunteer to enumerate some of the causes for such a condition among the children of the very poor, for those causes are potent factors and easily discoverable. Extreme poverty is accompanied by many unhygienic, uncomfortable conditions, by insufficient clothing, lack of nourishing food, or it may be of sufficient food to stay hunger, personal uncleanness, overcrowding in small, poorly ventilated rooms without sunshine or air. The lack of fresh air at night is worse than during the day. These people have a genuine fear of an open window at night and it is the *rule* for several members of a family to sleep in a small inside room, no window open and no outside air gaining access to the apartment. The child who sleeps thus is found to be pale and sickly, has no appetite for the food which may be had for its breakfast, goes to school in a weakened condition, is irritable, unable to pay attention, unable to sit still, or to comprehend instructions, is left back term after term, and is frequently labelled "a bad child." It may be that one or both parents drink intoxicants, while the child may be given beer or black strong coffee, and thus be made more irritable and less able to do school work. Enough for the children of the poor.

Let us turn to the cause of nervous instability among the children of the rich. Many of these children come into the world with a system out of tune. The social demands of the fashionable mother are very great; there are late hours, seldom a time when she feels free to spend much of her time with her little ones. All honor to the faithful few, for there are some to whom their children are God-given treasures, but the average mother of this class has a proxy to do the duties of motherhood for her; the nurse when the child is small, then the maid, the governess or valet, or tutor, or boarding school. Not long ago I heard a well known public man describe his childhood, and among the many good things he told about was his description

of the daily bed time, and of the sainted mother coming in to tuck all her little ones in their beds. He said that she always knelt with her children when they lisped their "Now I lay me—" and stated that she never missed a night, during his entire childhood, unless she were ill, and to this day, though he is an old man, the last thing he does as he settles himself comfortably for the night is to say over that childhood prayer. Talking over the subject of mothers with one who had heard these remarks, I was struck with the pathos and the force of a different motherhood, for this acquaintance said: "My childhood was a very different thing—my nurse always tucked me in bed—only very occasionally did I see my mother at such a time; she was always too busy to be bothered with her children, there was a dinner party, or a theater, or an opera, or a concert; we children were only a very secondary consideration."

This gives a pretty accurate picture of many homes to-day; mother is too busy with her clubs, or her bridge whist, or many similar occupations, to bother very much over her boys and girls. She sees to it that they are well clothed and have sufficient food, that when they are ill, doctors and trained nurses are provided, but everything possible is left for the nurse or maid to regulate; and how few of these servants are worthy of the great trust imposed upon them. A little lad of my acquaintance, and an only child, one who lived sufficiently near me for a very definite and accurate knowledge of his daily care to be known to me, was left day in and day out in care of his nurse, and later a very attractive French governess was employed. In his early babyhood he was one of the dearest and most lovable boys I ever knew. At the age of three or four he had become a very irritable child. I have known his young parents to go out for a dinner, or to the opera, or to some function which kept them away until the small hours of the morning. The boy was put to bed at the proper time, *but*, if he did not quiet down as promptly as his maid thought he should, he was threatened with all manner of terrors, and more than once I have known this boy to be left screaming from fright, by this *trusted* maid, sobbing pitifully for long hours until he fell asleep from sheer exhaustion. Naturally enough as the boy grew older he frequently wakened during the night crying out in frenzied terror from imaginary monsters, and his parents then thought him ill, and he grew petulant, defiant, even ugly when crossed, until they became alarmed, but never once suspected that the cause

of his condition was, primarily, their own neglect, and secondarily, the unsympathetic and ruinous treatment accorded their child by the woman they had employed to act as their proxy.

This sort of motherhood does more to demoralize the nervous system of a child than most can properly appreciate. A new baby came into the home of a young couple a short time ago and a friend was sympathizing in the kindest way possible with their limited means, and said to me, in speaking of the young mother, "Poor thing, she cannot afford a nurse for the baby; she will be obliged to take care of him herself." My mental comment was "happy baby."

Malnutrition is a very potent cause of nervousness in childhood. This condition may be brought about by improper food from birth, or later, under-feeding or over-feeding, insufficient sleep, insufficient exercise in the open air, insufficient recreation, or recreation of a character which fails of its purpose, *i.e.*, allowing children to attend the theaters or keep late hours. The drama is often trying to adult nerves, and yet one frequently sees young children in an audience where tragedy is being pictured. This surely must appeal to any sensible parent as wrong. Such doubtful recreation as this is too great a tax on the impressionable child. The love of excitement and unrest is encouraged and shortly we have developed the nervous, blase child of fourteen or sixteen. Everyone agrees nowadays that the "dime novel," with its blood-thirsty hero and his accomplices, is a bad thing, and that it will produce neurotic symptoms and develop the bad boy who in turn will become the young criminal, one who will attempt a "black hand game," as was recently attempted to coerce a well known lady of our city to place two thousand one-dollar bills in a certain spot in Central Park. Yet few realize that these acts are effects produced upon an unstable nervous system by a definite and exciting cause. The lad or lass becomes excited, nervous, feverish; the brain becomes active in the most unhealthy manner, and we know the result.

Acute infectious diseases, such as scarlet fever, diphtheria and measles, frequently leave the child in a very neurotic condition. Gastrointestinal disorders frequently aggravated by over-indulgence in tea, coffee and sweets, may also have a disastrous effect on a nervous system which is not of the strongest. We find the child pale, generally weak; dark circles appear under the eyes; he is listless, inattentive, and cross.

Rheumatism is a disease of childhood which frequently leaves the nervous system in an unstable condition. The rheumatic child is often subject to attacks of tonsillitis and chorea. A child with a rheumatic tendency should be carefully guarded, in order to avoid all undue excitement or long hours of school and over pressure to keep up to grade. These symptoms should be considered as danger signals, calling for thoughtful consideration of diet and clothing, and the need of all the fresh air and sunshine possible.

The *emotional temperament* is a factor to be considered. Heredity apparently plays an important role in nervous children. Children born of neurotic parents seldom show sturdiness or a healthy nervous system. The nervous and mental equilibrium of such are easily unbalanced. Such children are more prone to fly into a rage or into a fit of hysterical weeping over a trifle than are children born to parents of a well balanced nervous system.

The *effects of the common ailments* of childhood are far more prostrating and more lasting in neurotic than in normally healthy children. To quote an eminent English specialist on the nervous diseases of childhood: "This tendency is inherited. There are few neurotic subjects whose parents, collaterals or ancestors, are not or have not also been neurotic."

Symptoms.—What will lead to the diagnosis of a nervous condition in childhood? How is a mother to know her child is nervous? There are many symptoms, barring the antics of a spoiled child, who may or may not be a nervous child *per se*, which may help a mother to realize that her son or daughter needs the care of a physician or a change of environment. Capricious appetite, continued, may mark the onset of nervousness, also hypersensitiveness to sounds. Dr. Ashby tells of a case which came under his care: "A little girl would say when the bells of a church near by began to ring for evening service, 'church bells make baby sick,' and sometimes she would actually vomit on such occasions. In later years she suffered from migraine and hysterical blindness." A gentleman of my own acquaintance had a very nervous childhood. For years, as a lad between the ages of thirteen to nineteen years, he could not attend church services without weeping bitterly. As soon as the organ would begin the prelude, this boy's tears would come. During the sermon he would gain control again, but the minute the organ began at the close of the service he was in tears. The jangle and jargon of street noises in

such a metropolis as New York are quite sufficient to cause decided neuroses in a sensitive child.

Hypersensitiveness of sight and smell are not infrequently accompaniments to a nervous condition in children. Fear is a very pronounced symptom. "Much of the self-consciousness, introspection, hypochondria and hysteria which is noticeable in adults may be traced to the effects of fear in early life. In young children the *earliest indications* of fear should be recognized and should meet with sympathy, and an encouragement to tell of their fear, should receive a lucid explanation and a removal of the cause if possible." A frightened child should *never* be ridiculed. A certain amount of fear is perfectly natural to all human beings. It is meant to be a protection and a safeguard, but no young child should eke out a miserable existence because of unhealthy fear. The *imaginative child* is the one who suffers most from fear, therefore, the stories told or read to such an one should be healthy ones, and denuded of all semblance of mystery. This type of child is one who is frequently made miserable by the superstitious tales of the mother's proxy, for of all people who revel in the supernatural and in superstitions, the house servant is easily in the lead, and many a hypersensitive child has been made to pass a miserable existence for months or years because of such tales.

The *misunderstood* child is a hypersensitive child. Many of you may recall the picture Charlotte Brontë gives of the punishment meted out to the child Jane Eyre (Chapter II), while she was incarcerated in the great red room in her aunt's house in which her uncle died, of her abject terror at the gloom and the sepulchral surroundings. One is stirred by the helpless terror of it all, yet we have many such cases of terror in the nervous childhood of to-day. The child is afraid of the dark, or of certain noises, etc., yet often this fear is ridiculed and the victim silenced by the banter given and continues in the terror when a kindly explanation would remove every vestige of fear.

Some of our great men and women suffered the tortures of fear in childhood. Charles Lamb, in his well known essay on "Witches and other Night Fears," says of himself: "I was dreadfully alive to nervous terrors. The night time and solitude and the dark were my hell. I never laid my head on the pillow I suppose from the fourth to the seventh year of my life, so far as my memory serves in things so long ago, without an assurance, which realized its own prophecy, of seeing some frightful

spectre." Harriet Martineau says in her essay on Fear: "I was as timid a child as was ever born yet nobody knew or could know the extent of this timidity, for though abnormally open about everything else I was as secret as the grave about this. I had a dream at four years old which terrified me to such an excess that I cannot recall it without a beating of the heart. I could not look up at the sky on a clear night, for I felt as if it was only just above the tree tops, and might crush me. I could not cross the yard except at a run from a sort of feeling, with no real belief, that a bear was after me. The horrors of my night were inexpressible." Her particular terror was of a magic lantern. "I never saw," she says, "the white cloth with its circle of yellow light without being in a cold perspiration from head to foot." Again she says, "Some of my worst fears in infancy were from lights and shadows." Her blood ran cold at the sight of shadows cast by the window frame on the ceiling when the lamplighter went his rounds in the street. The prismatic colors on the wall caused by the sun shining through glass lustres filled her with alarm. Under all this she says: "My health was bad, my behavior was dogged and provoking and my temper became for a time insufferable."

Fear or punishment, especially corporal punishment, may cause a nervous child to do many acts which would otherwise not be committed were his parents more sympathetic and less harsh. It may be doubted that corporal punishment is ever remedial in any sense. If it acts as a deterrent it is merely through fear of physical pain and from no higher motive. It cannot ennoble character but may degrade it by loss of self respect which it entails. This form of punishment should be *unhesitatingly condemned* in all cases of emotional childhood, for it cannot do other than seriously aggravate all symptoms. Jealousies in neurotic children are danger signals. Under-feeding and disordered sleep should always arouse investigation on the part of the parent. Among the most *common causes of restless sleep* are indigestion, hunger, which may be due to unsuitable food which has not appeased the appetite, earache, toothache, irritations of the skin, and pain of any kind. A neurotic child is nearly always a bad sleeper. Such a child, as we have said, frequently has hypersensitive hearing and is easily awakened by unusual noises. The child should be assured of quiet for his hours of sleep. The late hours of the day should be quieting ones for the neurotic child; no exciting game or story; a soothing story, if any,

followed by a gentle soothing lullaby, which will often prevent the night terrors which follow the restless activity of mind resultant from an exciting tale or romping game just before bed time. What may be simply a bad dream to the strong child may be a night of terror to the neurotic child. In reading of the psychology of dreams I quote: "In dreams we are all mad, because sense of judgment, of proportion, of humor, and of the ridiculous, deserts us. Insanity with all its delusions is but a waking dream. Most delusions have a physical basis in fact, which the mind misinterprets because the centers of judgment sleep. The dream hallucinations of very young children are mostly due to weakened memory of objects which they have seen, and which have terrified them—we may not know when or why—by day." Many children have cause to remember Thanksgiving day with its ragamuffins and masks, although at the time they may have shown no sign of perturbation but may have shown much interest in them.

In one sense all bad dreams are symptomatic, that is to say, their exciting cause is a peripheral stimulus arising internally or externally. The nature and origin of the stimulus may to some extent be explained by the tenor of the dream.

For instance, partial asphyxia due to close atmosphere, or to covering the face with bed clothes, or to obstruction of respiration by adenoid vegetations, will give rise to a dream in which a sense of impending suffocation causes terror. Again, dreams of being pursued, yet unable to stir, may be occasioned by actual restraint of movement from heavy bed clothes. Dreams of being exposed on an iceberg in the midst of a vast frozen sea may arise from feeling cold.

Below the age of five or six the tenor or content of the dream is usually simple, and there is seldom any difficulty in divining its nature from the child's explanations.

Early school tasks, and especially initiation into the mysteries of simple arithmetic, will cause children to babble scraps of hardly acquired learning and do sums in their heads all night long. Just as in adults who are mentally overworked, the trivial events of the day are woven into distressing dreams at night.

Children who suffer a great deal from headaches frequently have bad dreams and night terrors. Children with these and other disorders, such as frequent wetting of the bed at night, are among the number suffering from nervous disorders, sometimes of

a very serious type, and such symptoms should lead directly to a consultation with a physician who has made a special study of children. Neurotic children present many shortcomings. It has been said that "a child of three has little or no moral sense; it is purely selfish. At six it should show some consideration for others. At eight it should have some definite notions of what is right and wrong."

Environment may have much to do with the morals of a neurotic child. The companions may exert a powerful influence for good or ill. We may find the neurotic child exhibiting great cruelty to animals. His pets may be tortured unmercifully. Violent fits of temper are very common. "One cannot expect a child to exercise any control over its passions unless it is inspired by the force of example." Frequently this passion may be an indication of nervous instability resultant from prolonged and severe illness. Impetuous parents may be an aggravating sources of irritation. The nervous mother who will slap the child about the face or ears, the father who flies into a fit of passion because the children make too much noise, are all fairly familiar persons to all of us. How often do we find a child, usually the neurotic child, hectoring by over-bearing unsympathetic brothers and sisters who deride our patient and call him or her all sorts of nicknames. Neurotic children may have lapses of dishonesty, and are very frequently untruthful. "Neurotic children are ready enough to brood over imaginary grievances and slights, and their misery may be increased ten-fold when the grievances are genuine." Romance weaving is common in all imaginative children who have not learned to distinguish between the truths of allegory and fact. Sometimes it is due to vanity or desire to create an impression. Darwin says, that as a child, he was cured of this habit by having his most startling narratives received with chilling silence. Sometimes little children believe implicitly in their own inventions which may in some cases be inspired by vivid dreams.

Romance weaving, however, may, even in young children, be due to hallucinations and delusions, and may be a sign of impending illness, such as meningitis, or follow in the wake of fevers.

Dr. Francis Warner mentions a boy who went to school looking distressed and said he must return home as his baby brother was dead. He had no baby brother. The child often had illusions and saw what existed only in his imagination; he soon after became a subject of epileptic fits.

Sexual aberrations, such as masturbation, may exist and it is necessary to be on the watch for these bad habits in young children of both sexes, and to check them at once if they are found to exist, as they are especially harmful to children of the neurotic type.

During the past few years the subject of defective vision or eyestrain, as one of the causative factors in the nervous troubles of childhood has received a great deal of attention, and one of the first requirements made of parents who bring their nervous children to me, is that they shall have the child's eyes examined by an experienced eye specialist in order to determine whether there is any defect of vision and if there is, determine the amount and degree and to what extent this may be responsible for the nervous instability of the patient.

To-day many physicians believe that very many of the cases of periodic headache, hysteria, neurasthenia, brain fag and nervous breakdown, are due in a greater or less degree to eyestrain.

Defective vision among school children has been found to exert a very injurious effect upon their capacity for learning and also upon their general health. To quote from a report on examination of eyes made in a Massachusetts town: "Many school children who appear dull and inattentive, who are nervous, irritable, morose, or disorderly, who suffer from headache, dizziness, nausea, or pain in the eyes, owe these ills largely to such defects. Generally neither they, nor their parents, nor their teachers, are aware of the cause of their troubles. The examination of hundreds of thousands of school children has demonstrated that from 25 to 35 per cent. of them need the service of an oculist or an aurist, or of both."

In the New York City schools during the past year, 11.85 per cent. of the pupils in elementary schools were found to be suffering from remedial defects of the eyes:

I quote as follows:

School year, Sept. 1908-June, 1909.

Children examined.....	323,344
Defective vision.....	38,329
Percentage found defective.....	11.85
Glasses fitted.....	8,634
Medical treatment.....	16,962

JOSEPHINE BAKER, M. D.,

Chief of the Division of Child Hygiene.

One can hardly wonder that a child will show strong dislike for school, and play truant in order to get away from close work which he cannot see, or sees with difficulty.

Another source of nervous excitement and eyestrain leading to nervous instability in children is the moving picture show. The flickering lights, the breaks in the films, and very many films are very faulty in this respect, and the character of the figures as well, all tend to excite any child, but the nervous child suffers more particularly from these evils. Even the highest class of pictures strain and tire the eyes. Much might be said against this sort of amusement from a moral view point, but that is another story to be dealt with at some future time.

The frequency of headaches in nervous children is a point for consideration, especially in the children who have school work to prepare. Let this child have a little additional excitement, a little more work than usual and we find him suffering from a headache, and this headache is usually frontal, and often centers about the eyes.

Many times the nervous child will display aggravated speech defects which may need constitutional treatment as well as the services of the medical expert.

With such a train of cause and effect, the questions which naturally arise are: "What shall we do to prevent our children from becoming nervous?" and "How shall we treat them when we find them in such a condition?"

Treatment.—The nervous child is a law unto himself or herself, a problem which must be dealt with individually. Such a child must be the subject of much thought and careful study on the part of the parent, physician, teacher, nurse, and where a maid is given the care of such a child, she must also be given minute instructions regarding her special charge. The greatest amount of tact and patience are needed in dealing with this kind of child and an inexhaustible supply of common sense is absolutely necessary. Much sympathy for the patient should be shown at all times, also a great deal of wise discretion is needed to guide the sympathy. Firmness, but always of the gentle type, is necessary, and obedience should be exacted through the media of these qualities just mentioned; one must never deal with such a child when in anger, or permit one's self to be roused into a temper. Such a loss of self control shows weakness on the part of parent or teacher or nurse, and will frustrate all plans to bring about the desired results.

We have learned that nervousness may first show itself in

the very young infant. Therefore, the management of these children begins in the nursery. While the first signs of nervous instability may not be true dangers in themselves, yet they must be considered as warnings, danger signals of trouble ahead, if not heeded and cared for in time. One should always bear in mind that nervous children are, as a rule, sensitive children, therefore, great care must be observed that this sensitive mechanism be not too rudely shocked. The nervous child is an imaginative child. Therefore, this imagination must be guided into healthy channels. The stories told, the books read to, the picture books provided for such a child should be those which will give pleasure and excite imagination along the paths of that which will prove helpful and healthful. The nervous child should not be taken to children's parties nor to theaters or opera. A drive or pleasant outing where fresh air and sunshine may be in abundance will produce a lasting benefit. Great care should be exercised that the nervous child should not be frightened; a severe fright may be productive of a very grave sequel. The fears of a child should never be laughed at; ridicule is a cowardly weapon to use in such a case. It is much better that the child should feel that it can speak of its fears, and know that mother or teacher or nurse will explain them away, so that that which caused such terror before will fade into something tangible which cannot harm. Threats of shutting a child into a dark closet or into a dark room, of giving him to the ragman, or any other threat is reprehensible in the extreme. If punishment is necessary, and it very frequently is, make it a sensible procedure, deny the child something it desires, it may be the withholding of a pet toy, or a book, or a promised pleasure trip, to a later date, but be sure to make the *cause* for this withholding perfectly plain, and *never mete* out any form of punishment in a temper or in anger. Calmness and self control are two absolute essentials in dealing with the neurotic child, and especially important where any punishment is concerned. The other children in the family should be taught to respect the sick child; there should be no teasing, calling of names or bullying permitted on the part of the stronger children; they should be taught to respect the rights of others and especially the rights of the brother or sister who is easily frightened or timid. The sick child should also be taught this, and because it is sick it should not be permitted to grow exacting and be spoiled by expecting everyone to yield to its caprices. This method should work quite as much harm in another direction

as would the harsh method of treatment. Such a child needs most careful management, and each case presents its own complexities, and must be dealt with accordingly.

Shall the nervous child attend school? This is a question which cannot be answered positively either in the affirmative or in the negative. Here again the individual child and its particular and peculiar needs must be studied. It is within safe limits to state that *the hours in school should be shortened for all nervous cases*, where the child is especially neurotic, suffering perhaps from chorea, easily excited and made restless and unhappy over the daily routine or grind of the class room. Such a child should be drawn from school entirely for a time, and if possible be given a complete change of environment. If this last is impossible they should be taken out of school and should spend as much time as possible out of doors; and if the parents have a good suitable roof on their house, let them fit it up as a play space and keep the child up there. Or if they live in an apartment house and can make use of the roof, let them have a corner set aside for the use of their child.

Many practical plans may be devised for such a play ground. The morning and afternoon naps may be taken up there and such a means can become the strongest element for the development of a healthy nervous system, in the healthy body of the child. Sunshine and fresh air are far better remedies than medicine.

Physical training and baths are both excellent therapeutic measures. If one can afford to have a special teacher come in for an hour each day, for three days in the week, to give the child special exercises arranged for its especial needs, so much the better, but if not one may be able to devise some scheme whereby it may have some such training. A nervous child should be placed under the care of a physician who has an understanding of child nature, who is sympathetic and at the same time firm. With such a counsellor, to advise a mother, and with teachers and nurse carefully chosen because of peculiar fitness, or by the personal sacrifice of pleasures and little personal comforts by parents who cannot afford helpers, much can be done to strengthen and steady an unstable nervous system.

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THE THERAPEUTIC USE OF TUBERCULIN IN INTRA-
THORACIC TUBERCULOSIS OF CHILDREN.*

BY

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THE term intrathoracic is preferred to pulmonary for the reason that in many of the cases which are roughly classified as incipient pulmonary tuberculosis the lesions are only actually present in the mediastinal or bronchial glands. Any considerable enlargement of these glands may give definite physical signs in two ways. The enlargement of the mediastinal glands is often sufficient to produce a considerable degree of dullness, and the enlargement of one of more bronchial glands will produce by pressure on the bronchi a change in respiratory sounds and may produce localized râles by the pressure irritation on the mucous membranes.

Although the problem of diagnosis in incipient tuberculosis is a matter of very great interest, in this paper it will not be discussed. The paper is further limited in its scope by assuming that tuberculin has already been proven of therapeutic value if properly used in suitable cases. This assumption is still open to argument and is strongly opposed by a few men of wide clinical experience, but in most instances the opposition is theoretical and not due to actual tests. There are, however, some practitioners who are prejudiced against its use because of unfortunate experiences in the early nineties. Assuming, then, that tuberculin is a useful therapeutic agent under certain circumstances, it is important, if it is to be used correctly, to gain some knowledge of its action. Unfortunately, this very matter is still in dispute.

There are two distinct theories in regard to the way in which tuberculin acts: 1. The theory of bacterial immunity which is chiefly supported by Wright and some others. 2. The theory of toxin immunity which has been much more generally accepted. Thus far the only grounds for supposing that there is any increase in bacteriolysis or any form of bacterial immunity are certain results which Wright has obtained in his opsonic work. Unfortunately these results are not supported to any extent by other

*Read before the Section on Pediatrics, November 23, 1910.

observers; that is, there is apparently no constant relation between the opsonic index and the tubercular reaction.

The other theory, that of toxin immunity, is much more generally accepted, particularly in this country, and is the basis of the tuberculin treatment in most of our sanatoria.

According to this theory, tuberculin by its action on the individual body cells increases their tolerance of the toxins liberated by the tubercle bacilli at the seat of the disease, and thus increases the general resisting power of the organism without having any direct effect upon the diseased foci or upon the tubercle bacilli themselves. A somewhat similar theory has also been advocated according to which the tuberculin by its action on the cells in the tubercular focus frees them from the toxins which they have absorbed in their fight against the disease and thus enables them to act more powerfully in the healing process. This explains the systemic reaction by the supposition that it is due not directly to the tuberculin itself but to the toxins freed by the tuberculin, and suggests that the harmfulness of the severer reactions is due to the systematic poisoning produced by these free toxins. We must remember, however, that these are both theories and that at present our only grounds for using tuberculin therapeutically are the results of the clinical experience of a large number of careful observers. Nevertheless the dosage, the interval, and the period of treatment which we adopt must depend to a certain extent upon our theory of the action of this agent.

According to the personal belief of the writer the curative effects of tuberculin are produced by its stimulation of the body cells in general and not to any direct action on tubercular foci. In other words it apparently increases the general resisting power of the organism and thus has an indirect curative effect. Under this supposition there must be with each dose more or less of a reaction, but this reaction should be so mild as not to produce any lowering of the body resistance, and the dose should be repeated at sufficiently frequent intervals to prevent the production of anaphylaxis.

Contraindications.—It is of the utmost importance that the cases to be treated are such as will react in the proper way. According to practical observers tuberculin is harmful in all cases where there is a rapid pulse, a rapid respiration, or where the temperature reaches 101 or over, unless this temperature is evidently due to extraneous conditions. True nephritis, unless

it is a tubercular nephritis, is a contraindication; diabetes, cirrhosis of the liver, in fact, most of the other chronic systemic diseases are contraindications. Other writers also exclude all heart lesions, and hysteria is also considered a contraindication for the reason that hysterical patients are apt to attribute various minor ailments to the use of tuberculin and the psychic effect is bad. This, of course, eliminates a very large majority of the cases of tuberculosis that have existed for any length of time.

On the other hand, there is no ground for using tuberculin in the incipient cases which we know by experience will usually recover under proper hygienic and dietetic conditions. The percentage of recovery in these cases is greater in children than adults. It is, as a rule, much easier to give them the proper treatment for the reason that there are no family complications to interfere. This reduces the number of cases in which it is advisable to use tuberculin to a very small percentage of all cases observed.

On the one hand, they must have had the test of treatment under ordinary means and under proper conditions; and on the other, they must not show any of the contraindications stated above. Such cases belong to the more or less chronic type in which the lesions are progressive, but which, on the other hand, do not yield to ordinary treatment. They are apparently greatly improved at first but after a time the improvement ceases and there is a return to former symptoms and increase in the physical signs. Under careful nursing we find that this exacerbation disappears after a week or ten days, but as soon as the patient becomes at all active another exacerbation occurs. In other words, the organism has accomplished all it will without some further stimulus to activity. Under such circumstances tuberculin will be found of very great use, but the dosage and period of treatment need to be determined very carefully for each individual case.

In most instances the period of treatment of from ten days to two weeks will be found most useful. The intervals between treatments will vary according to the amount of reaction produced but, as a rule, the small dosage, with a dose every twenty-four hours can be used safely. The dose should be very minute, from one to five one-thousandths of a milligram is ample for the first dose. This should be increased, and the final dose need not exceed one one-hundredth of a milligram. With this dosage

there is almost no reaction in the ordinary sense. There may be at times a slight rise of temperature of a few fractions of a degree, there may be some flushing of the face and probably there will be a certain amount of nervous irritability, possibly mild muscular pain. A greater reaction than this is a definite indication that the dose has been too large and such a reaction is in my experience harmful rather than beneficial.

After such a period of treatment there is a very definite and progressive improvement for a period of several months when there is likely to be another exacerbation of the old symptoms, but such an exacerbation is, as a rule, much less marked than before the treatment. This should be an indication for another period of tuberculin therapy. Three or four such periods will usually bring about a complete arrest of the condition.

In using such a line of treatment it is evident that the patient must under very careful supervision. Although tuberculin is used by a few in out-patient work, it can hardly be possible to get any great knowledge of results under such circumstances. The patients should be either in a hospital or sanitarium, or in exceptional instances they may be treated in their homes if proper nursing facilities can be supplied.

The temperature should be taken by rectum every four hours for at least forty-eight hours before the treatment is instituted, during the entire course of the treatment and for a few days following it. This does not mean that the patient shall be kept in bed or kept in the house. The outdoor and the dietetic treatment should go on as usual, but overexertion of any kind should be carefully avoided.

There should be frequent periods of absolute rest during the day and violent exertion of any kind should be prevented. Such oversight for children means the constant care of a skillful nurse and can, therefore, be found in most instances in hospitals only.

TRANSACTIONS OF THE CHICAGO PEDIATRIC SOCIETY.

Meeting of October 18, 1910.

The President JOHN M. DODSON, M. D., in the Chair.

The president delivered his annual address.

DR. FRANK X. WALLS reported a series of

TWELVE CASES OF HYPERTROPHIC PYLORIC STENOSIS IN INFANCY TREATED SURGICALLY WITH TEN RECOVERIES.

Case.	Sex.	Age at Onset.	Age at Operation.	Nature of Operation.	Operator.	Result.
1.	M.	3 weeks	3 months	P.G.E.	Van Hook	Recovered
2.	F.	1 month	3½ months	P.G.E.	Van Hook	Died
3.	M.	5½ weeks	2¼ months	P.G.E.	Van Hook	Recovered
4.	M.	4 weeks	2 months	P.G.E.	Van Hook	Recovered
5.	M.	4 weeks	2 months	P.G.E.	Murphy	Recovered
6.	F.	3 weeks	4½ weeks	A.G.E.	McArthur	Recovered
7.	M.	3 weeks	6½ months	P.G.E.	Richter	Recovered
8.	F.	3 weeks	6 weeks	P.G.E.	Richter	Recovered
9.	M.	6 weeks	3½ months	P.G.E.	Richter	Recovered
10.	M.	1 month	2½ months	P.G.E.	Van Hook	Died
11.	M.	2 weeks	26 days	P.G.E.	Richter	Recovered
12.	F.	3 weeks	30 days	P.G.E.	Richter	Recovered

DR. H. M. RICHTER.—My experience in this work has been limited to Dr. Walls' cases which I saw in each instance after it was decided that they were cases requiring surgical interference. I have also done a certain amount of experimental work which will have a bearing on my view-point.

When the cases are definitely of the type of intestinal obstruction they present the same problems that are presented by intestinal obstruction anywhere. What makes this particular type more serious than the ordinary case of obstruction is that it is high up in the intestinal tract and the patients are unable to bear long-continued surgical work. A third factor which makes the mortality-rate in this class of work as high as 30 and 50 per cent. is that they have been allowed to go for a long time. The low mortality in our series of cases I believe to be largely due to the fact that they were operated upon just as soon as it was definitely determined that they were proper surgical cases.

Limiting ourselves to the surgical cases, the question arises first as to the type of operation to be done; second, to the permanency of result; third, result as regards probable interference

with physiological function; fourth, possible pathological accident resulting from changed conditions.

There are three operations commonly used or suggested, stretching the pylorus, plastic operation on the pylorus, and gastroenterostomy. The first is the original Loretta operation. It is being discarded. It has been shown not to be feasible. The mere mechanical overcoming of the stenosed pylorus for the time being has not been permanent. Of course we are not dealing here with the same factors as in other structures. We are not dealing with inflamed tissue. The operation has been followed by recurrence. The second method has been carried out in a fairly large number of cases.

The modified plastic operation on the pylorus has been suggested with the idea of avoiding the dangerous features that accompany gastrojejunostomy.

The third operation in use, and at the present time most widely used, is the posterior gastrojejunostomy, no loop operation.

Talbot studied the metabolism of a child of three months on which the operation had been performed, and found digestion apparently normal. Matthews at the Chicago University did something that proves the harmlessness of the passage of the duodenal contents into the stomach. He ligated the duodenum low down in a dog and caused all the secretions to pass through the stomach before reaching the lower bowel. The dog upon which he did this lived and showed no signs of altered functions. When the duodenum is ligated in this way there is no apparent effect. The passage of the bile, for instance, into the stomach, is entirely without any ill effect. In studying some of these operations, the faulty technic has been found to cause the disturbance.

As far as the permanency of results is concerned: a post-mortem has been done on an infant a year after operation. The pylorus was still closed. If that is universal it merely means that the stoma which had been made takes the place of the pylorus and takes it effectually.

As to the question of accident; the fear is mainly due to accidents that have occurred in adults, in spite of the fact that we are not dealing with the same factors. The thing we fear most in the adult is the duodenal ulcer. I do not know that a single ulcer in a child has been reported.

So far as mortality is concerned, when the condition is recognized early the mortality is very low. Technic is another important factor in the results obtained and the technic can only be developed by a great deal of work of this sort both in children and experimentally.

DR. C. C. GRULEE.—Two cases that I have seen, simulated to a certain extent this condition. One was a baby born in the hospital and watched from birth. By the time the child was two weeks old it developed vomiting. It was very persistent and green, if I may call it so, but whether it was the characteristic bile shade I do not know. I made a diagnosis of pyloric stenosis and

advised operation. The child was operated on and although we did not find the tumor, we did find adhesions. It recovered and within three weeks it began to vomit again and died within six weeks after birth.

The next child was older. It had been under my care for some time. Soon after it got to the hospital it began vomiting. The vomiting was forceful, being thrown a distance of some feet. There was no rise of temperature and there was nothing wrong with the stool at that time. It was given chloral hydrate per rectum and it stopped vomiting as soon as it came under the influence of the chloral. No special peristaltic action was noted. It vomited everything given to it, whether water or food. The upper abdomen was quite distended. This child, however, was older than the usual run of children having pyloric stenosis, being six months.

DR. J. H. HESS.—I should like to ask Dr. Richter how many cases had tumors, and I should like to ask Dr. Walls how many of the males showed distinct tumor.

DR. WALLS.—All the twelve cases which we operated had tumors.

DR. RICHTER.—All of my cases were those of Dr. Walls.

DR. HESS.—The reason I ask is because personally I have never seen a girl with this condition, and so questioned whether the girls might not be cases of spasm. Schlossman universally promises to cure them in four months without the aid of a surgeon. His treatment consists in temporary absolute starvation. No food for eight days; Ringer's solution subcutaneously 100-200 c.c. per day of milk per rectum. As soon as the child will stand it, a little tea is given. Then, starting with skimmed human milk he progresses from diluted human milk to full human milk. Then a little buttermilk is added, the idea being to increase body weight by increasing the proteids. He says that no child should be put to the breast. He also uses hot applications externally to the abdomen. I have seen a number of his cases, two under treatment. Certainly he is getting results. Whether he tells us about all his cases or not, I do not know, but the five that I saw were certainly giving better results than I have seen obtained in this country.

DR. H. W. CHENEY.—As an evidence that gastroenterostomy is not incompatible with complete health, I will show a boy who was operated on and has had no trouble at all with his digestion or bowel movement. I feel that surgical treatment of these cases is the thing. However, that is not universally accepted. I was surprised to see physicians in St. Louis this summer who seemed to think that medical treatment was the thing. They also feed these children with the stomach-tube instead of allowing them to feed at the breast.

DR. J. H. KAUFFMANN.—How many of the children in this series of cases were breast fed, and what per cent. were fed artificially?

DR. HELMHOLZ.—To show that authors disagree I would like to cite Heubner. He has seen some seventy-one odd cases, all treated medically without a death. Of course his practice is largely limited to consultations. He sees them once and they go back home and he may never see them again and so lose track of them. Heubner lets them drink at the breast all they want to. If they vomit he lets them drink again and, if needs be, gives them hot applications to the abdomen. With this treatment he seems to have been able to cure his cases.

The treatment employed by Meyer is the constant administration of Ringer's solution per rectum, first to supply fluid to the body and, second, the constant irrigation seems to have a relaxing effect on the pyloric sphincter. I had an opportunity to see one case two or three days after this treatment was instituted; the sphincter relaxed but the child died of an intoxication brought on by having been allowed to take too much food after four days of complete starvation. Meyer has shown that it is very essential that only small amounts of food be given after the spasm has relaxed.

DR. WALLS.—In my cases the percentage of breast-fed children was very large. I think it was something like 80 per cent., if not more.

What happens to these babies if they are allowed to go on is a subject that is not clearly discussed in the text-books. A St. Louis physician had three cases die as a result of starvation. I personally know of three cases that died in the same way. More than 80 per cent. in Thompson's series died when treated along so-called medical lines. They do die, large numbers of them, and they die under the care of physicians who have a fair amount of intelligence and who know what medical treatment can do.

Granting that one has a case of hypertrophy of the pylorus, which treatment would you accept, Schlossman's treatment, starving the child for a week, then giving rectal feeding, and then skimmed human milk, and on by slow degrees to full human milk? This is certainly a treatment that it would hardly be possible to carry out here in any institution or in any family but those of the multimillionaires. The prolonged administration of skimmed human milk is a luxury. Contrast that with skilled surgical treatment. Two of my patients died, all of the others were entirely successful, and in some the mother was again able to nurse her child. If there is a temporary cessation of the milk, stimulation of the mammary gland may cause it to return. In June I had one case and in July another and they are now both apparently normal. Under Schlossman's treatment these babies would still be under treatment, and I can see no advantage in it from an economical point of view or from the standpoint of danger to the child's life. When we compare the two treatments and see how positive are the results from skilful surgery I think there is no question in the matter. I confess that there are many authorities in this coun-

try and abroad who seem to think that they should all be treated along medical lines, but I feel that they have a better chance under surgical treatment.

Dr. J. H. HESS read a report on

EUROPEAN PEDIATRIC CLINICS.*

DISCUSSION.

DR. ERNEST LACKENER.—One thing that the doctor has spoken about being prominently advocated in the old country—France and Germany particularly—is the particular effort put forth to guard the welfare of nurslings. The Pediatric Society of Chicago has not taken an interest in this matter and it does not redound to our credit. The laity of the city have taken an active part in it, the different bureaus have taken a part, but the Pediatric Society has not taken any steps.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Meeting of November 8, 1910.

DR. CHARLES A. FIFE, *of Philadelphia*, and DR. ELI LONG, *of New York*, in the Chair.

The Philadelphia Pediatric Society held a joint meeting with the Section on Pediatrics, New York Academy of Medicine. The discussion of the papers was limited to members of the Section on Pediatrics of the New York Academy of Medicine. Following this meeting an informal smoker was given at the Hotel Rittenhouse which was largely attended.

THE SYMPTOMS, MANAGEMENT AND TREATMENT OF NASAL
DIPHTHERIA.

DR. EDWIN E. GRAHAM of Philadelphia read this paper. It was important to remember that the Klebs-Loeffler bacillus might produce only the slightest irritation and discharge, with no membrane present, or it might produce the most intense inflammation with swelling and edema so extensive as to more or less completely block the nares. The amount of contagion was usually in direct proportion to the amount of discharge from the nose and nasopharynx. Diphtheria might be spread from a case in which there was little or no discharge present and yet the bacilli might be demonstrated to be present in the nose.

* To appear in a later issue of this Journal.

Such cases were often the focus from which epidemics had their origin; they were a great menace to the community. If the bacilli were found for more than a reasonable time, it was quite possible that they were not virulent and a guinea-pig should be inoculated to test their virulence. It was often extremely difficult to distinguish between the true and pseudodiphtheritic bacillus; therefore, inoculations in guinea-pigs should be made more often. After considering the symptoms of the mild, moderate and severe cases of nasal diphtheria, Dr. Graham stated that the membrane which appeared in the nose in most cases of scarlet fever and measles was not commonly diphtheritic, especially if it occurred early in the disease; if it occurred later in the course of these diseases then it was often diphtheritic. The occurrence of albumin in the urine was suggestive of diphtheria. In a doubtful case, in a child with a nasal discharge which persisted, a single negative culture was not positive proof that the case was not diphtheritic. With regard to the report of return cases, he believed that future investigation would conclusively prove that they occurred more often than was generally believed. He asked if one was warranted in sending such cases out without inoculating a guinea-pig to test the virulence of the bacilli. There was no doubt in his mind but that all such cases with diphtheria bacilli in the nose, all clinical evidences of the disease having disappeared, were possible sources of danger. Cultures should be taken from the throats of all children exposed to the disease; those showing the bacilli should be appropriately treated. It was unwise to admit into a hospital ward or institution any child who had a membrane in the nose or had a nasal discharge, unless a bacteriological examination showed the absence of the diphtheria bacilli. All visitors entering a children's ward should wear a sterilized cap and gown. All children who had been exposed to diphtheria should receive an immunizing dose of antitoxin. Physicians and nurses should always wear cap and gown when in the sick rooms; all nasal discharges should be destroyed, and antiseptic gargles and sprays should be used frequently by all coming in contact with the patients. Where the discharge was abundant and the nasopharynx was more or less blocked with secretions, these parts should be kept clean with warm, mild antiseptic solutions. The fluid entering a nostril should escape from the opposite nostril and the mouth and, for this purpose, a fountain syringe was better than a piston syringe. This irrigation should be employed once in four hours. In case of nasal hemorrhage, this irrigation should be discontinued. The earlier antitoxin was given in a case of nasal diphtheria the better. In the case of an infant, do not wait until the diagnosis was confirmed by a bacteriological examination. To postpone the early use of antitoxin in a case of profuse nasal discharge, when there was a membrane present, he considered inexcusable. Should anaphylaxis influence in any degree the giving of antitoxin? Much literature had been accumulated on

the theories, phenomena, lesions and mode of death in anaphylaxis in the lower animals, but one had difficulty in finding much in the literature regarding the serious results of anaphylaxis in man. Kerr, of Edinburgh, advised caution in the administration of antitoxin in the treatment of relapses. Data given by Funk from the Municipal Hospital in Philadelphia stated that the children in the scarlet fever and diphtheria hospitals were given one or more doses of antitoxin, and the curative doses were large ones. Rashes, joint pains, and slight febrile disturbances were occasionally seen; yet no symptoms of a serious nature were ever observed. The concentrated serum was safer inasmuch as a smaller measure by quantity was required. A conservative and safe method consisted in giving a small initial dose of antitoxin, about the usual immunizing dose, in all cases where a previous injection of antitoxin had been administered. If no immediate reaction was observed, it was safe in a few hours to administer the remedy in appropriate doses. If the case showed no immediate reaction, it was immune to the administration of the larger doses, which might be given with safety.

DISCUSSION.

DR. ROLAND G. FREEMAN of New York said that although anaphylaxis was a real danger he thought this fact should modify their use of antitoxin only by inducing them to use a very large initial dose, and so, if possible, avoid the danger which would exist in the administration of subsequent doses. Should, however, there be any indication for a subsequent dose the danger of anaphylaxis was so small in comparison to the danger of diphtheria that it should not in any way modify their conduct. The occurrence of this phenomenon was certainly extraordinarily rare. He could not recall a single case in his experience where such a reaction had occurred, although he mentioned two cases of infants who had received between 40,000 and 45,000 units in repeated doses with no bad reactions.

DR. MATTHIAS NICOLL, JR., said that the subject of Dr. Graham's paper was one of great importance. He had not the slightest doubt that one of the particular causes why, in spite of efficient doses of antitoxin, they were not making any headway against the occurrence of diphtheria was to be considered under the "germ carriers." These patients showed very slight symptoms, and yet they went around as germ carriers, spreading the infection. With these cases little progress had been made. In New York City the number of cases kept up year after year. It was difficult to get the people to recognize the fact that their children were not safe until their noses were absolutely free. Until they were taught better, little progress could be expected. It was not generally known how severe a case of nasal diphtheria might be and very often was; the average practitioner was apt to think it was subacute or chronic disease. It was a severe

and often a fatal disease in young children. In their experience, especially when it complicated scarlet fever, it was terribly fatal. He recalled four children with nasal diphtheria, their ages varying from one year to one year and a half, and they all died of the disease. These children recovered from the scarlet fever but died of the complication, diphtheria. Dr. Nicoll said he was much impressed with what Dr. Graham stated in regard to every case in which there was a very acute nasal discharge, and where diphtheria was suspected; one could not give antitoxin too quickly in these cases. There was no more fatal form of diphtheria than the laryngeal.

With regard to the irrigations, the piston syringe should be dispensed with, for it was liable to send products into the middle ear and cause mischief. He preferred to use the ordinary fountain syringe, using but little pressure. The technic he considered very important. The child should be thoroughly wrapped up like an Egyptian mummy. A few drams of water should first be introduced into the nostril slowly and an attempt made to loosen the plug; when the plug was removed no danger existed and the child would not suffer from the choking sensations. Dr. Nicoll showed some pictures of how the children were wrapped at the Willard Parker Hospital in New York and how irrigation of the nose and mouth was done. What was accomplished innasal irrigation was the removal of the nasal plugs; if the senasal plugs were gotten rid of, something of value was accomplished; they had removed something which served as a nidus for the germs of the disease.

DR. B. VAN D. HEDGES of Plainfield, N. J., said that they were beginning to recognize in diphtheria much the same conditions as existed in typhoid fever; they had the diphtheria carriers as they had the typhoid carriers. The cases of nasal diphtheria were in a large measure responsible for epidemics of diphtheria, because they were so often unrecognized. In Plainfield they recently had a mild outbreak of diphtheria in one of the public schools. At the suggestion of the Board of Health, the school physician took cultures from all the supposedly well children and found one case of postnasal diphtheria which, in all probability, had been responsible for the spread of the disease. No doubt many outbreaks might be traced to such a cause.

DR. THOMAS S. SOUTHWORTH of New York spoke of the enlarged cervical glands as a symptom of nasal diphtheria. He thought this was a sign of considerable value, especially when the discharge from the nose was not very noticeable. He recalled such a case which came to him undiagnosed for autopsy a few years ago; in this particular case the membrane was in the nasopharynx largely, and not visible at all in the pharynx. It extended back in the nose and down to the level of the soft palate. This impressed him with the importance of enlargement of the cervical glands; wherever one found enlarged glands in the neck without apparent cause, he believed it was worth while to ex-

amine the nasal secretion for the presence of the Klebs-Loeffler bacilli. Among the common types of nasal diphtheria was that seen in small children, the marantic children, where there appeared a slight bloody discharge from the nares. This was a common type in the two institutions with which he was connected in New York, and it was a type that frequently was overlooked by the house staff. Dr. Southworth said he could pick these cases out in children who were often not supposed to be sick. When he saw a chocolate-colored discharge from the nose, if it was not due to some foreign body, it was almost invariably due to the Klebs-Loeffler bacilli. In many of these cases irrigation of the nose was not as applicable, or productive of such good as in the larger children. A mixture of much value in these cases consisted of stearate of zinc suspended in albolene; this made a cream that was very healing. It was often surprising how rapidly the discharge disappeared and with it, for some reason, the Klebs-Loeffler bacilli disappeared as well.

DR. L. E. LA FETRA of New York asked Dr. Graham what they did with those chronic cases of nasal diphtheria occurring in institutions in whose cultures there were formal nonvirulent diphtheria bacilli. Did they consider that such bacilli could become virulent in other children? Were these children allowed to run around the hospital with the diphtheria bacilli in their noses?

DR. EDWIN E. GRAHAM of Philadelphia replied that in cases where repeated examination of the nasal discharge had shown the presence of the Klebs-Loeffler bacilli, but where the inoculation in guinea-pigs had shown these bacilli to be non-virulent, he always considered it legitimate to allow such children to go home and mix with other children. That was the policy he had followed.

THE ANATOMY OF THE CHILD'S HEART AND ITS PRACTICAL APPLICATION IN PHYSICAL DIAGNOSIS.

DR. GEORGE FETTEROLF and DR. J. CLAXTON GITTINGS of Philadelphia presented this paper. Their work had consisted in making sections and dissections of the bodies of infants which had been injected with 10 per cent. formaline solution and then frozen. It was found that the thymus gland was of greater size and extent than was usual; in places it touched the trachea. Sudden death would result if the gland became even moderately enlarged. Delay in involution would extend the danger period. The upper median portion was deeply indented posteriorly by the left innominate vein, which lay immediately on the anterior facies of the trachea. Any increase in venous pressure might cause compression of the trachea by this vein, the latter being braced anteriorly by the thymus. This was a possible explanation of death of the young during anesthesia. If there was any truth in this theory, venesection would be indicated in such an emergency.

The horizontal position of the heart in infancy was well exemplified; the heart occupied a large amount of space reaching, at its greatest depth, from the sternum to the vertebræ. Bronchial breathing posteriorly in cases of enlargement of the heart or pericardium was easily explained by the pressure on the left lung. The right auricle lay directly in front of the right half of the left auricle but did not touch the chest wall. The appendix was the only portion which did. The blood from the inferior vena cava was directed upward by the Eustachian valve and not to the left, as was commonly supposed. The foramen ovale lay in an almost horizontal plane, and was not vertical. The tricuspid orifice was practically vertical, and opened to the left and slightly forward. The bottom of the right ventricle was nearly on a level with that of the right auricle, and gravity played little if any part in the passing of the blood through the tricuspid orifice. The right ventricle constituted practically all of the heart which touched the anterior chest wall, and was slightly overlapped on each side by the right and left lungs. Posteriorly it was bounded by two structures, the left ventricle below and the root of the aorta above. The aortic sounds, therefore, at the level of the second costal cartilage must be heard through the medium of the conus arteriosus. The left auricle was a horizontal cylinder, lying at the extreme back of the heart and extending throughout the entire width of the base of the heart. The right end of the left auricle lay directly behind the right auricle, the left end behind the left ventricle. The mitral orifice lay in a plane approximately parallel to the anterior facies of the vertebral column at this level. The mitral and tricuspid orifices, therefore, lay in planes which were almost at right angles to each other. The arch of the aorta passed almost directly backward, and not from right to left. Pressure upon the greater azygos vein by a dilated heart was impossible, whereas pressure upon the pulmonary veins, especially the right, could occur with even moderate degrees of enlargement. This explained in large part the hydrothorax and pulmonary congestion which were seen in many cases of enlarged heart without signs of stasis in the systemic circuit. The relatively loud sound of the closure of the pulmonic valves in children as compared with the aortic might be due to the persistence of the thymus, as well as to the fact that the upper lobe of the left lung did not cover the pulmonary artery. More important, however, was the difference in tension. From a correct conception of the position of the heart *in vivo* they drew conclusions as to the pathological anatomy in case of enlargement. Increase in size to the left would be due mainly to enlargement of the left ventricle; to the left and upward mainly due to the left auricular appendix and to a slight extent the left auricle; to the left and downward to the left and right ventricles. Enlargement to the right would involve mainly the right auricle and appendix and to a lesser extent the right ventricle and the right end of the left auricle. The mitral,

tricuspid and aortic orifices and valves were practically contiguous structures, readily explaining the difficulty in distinguishing the murmurs produced in cases of double or triple lesions or leakage.

The difference in physical signs over the right and left apices of the lungs was due to the fact that the trachea and right apex were contiguous structures. On the left side they were separated by the aorta, left carotid and subclavian arteries, esophagus, areolar and lymphoid tissue. The bronchial lymph nodes at the bifurcation of the trachea were situated above the heart, so that there was no good conducting medium through which bruits could be transmitted to the chest wall. The persistence of the thymus which could exert pressure on the vessels as they arose from the arch of the aorta might explain the bruit heard over the upper sternum with the head extended. Surrounded as were the bronchial glands by structures which would give a dull note, it seemed highly problematical that enlargement of the glands could be diagnosed by percussion.

The sections afforded a clear demonstration of the position of the lobes of the lungs and emphasized the fact that physical signs in the lungs posteriorly, as high as the spine of the scapula, were produced in the lower lobes. Anteriorly, on the right, the fourth rib divided the upper from the middle lobes, while on the left any signs heard above the heart and in front of the anterior axillary line would denote that the upper lobe was affected.

DISCUSSION.

DR DAVID BOVAIRD, JR., of New York said that the demonstration made by Dr. Fetterolf showed clearly that the curriculum in the medical colleges needed a new course of instruction. They were familiar with applied surgery, but what they now needed was a course in medical anatomy. He was delighted at having the privilege of seeing such splendid preparations. It was impossible to cover all the points brought out in this demonstration, but Dr. Bovaird said he would venture upon two.

First, the relationship of the thymus glands to the innominate vein had been made very clear; it showed that the most direct effect of any enlargement of this gland must necessarily be pressure upon the left innominate vein. This was a vexed question that had been much discussed; if one accepted the mechanical compression theory of the effects of enlarged thymus gland, implying pressure upon the left innominate vein, one naturally would look for cyanosis, but cyanosis was almost always absent in the clinical conditions associated with enlargement of the thymus gland, and especially in the cases of sudden death.

Second, he was interested in the demonstration of the relationship between the chambers of the heart, the left lower lobe of the heart, the left lower lobe of the lung and the pulmonary veins, and any pressure upon which might cause hydrothorax.

The demonstration had been very helpful in clearing up points that had been very obscure, and especially helpful in showing the effect of pericardial effusion in children. He was particularly interested in the physical signs at the base of the left lung when pericardial effusion in children was present. He had been much puzzled in following the physical signs which were interpreted to be the result of pressure upon the left lower lobe of the lung to find that they were often gradually replaced by the signs of fluid in the left pleura.

The use of the aspirating needle under such conditions often showed one that he had to deal with a case of hydrothorax upon the left side, the pressure upon the pulmonary veins having gradually led to serous effusion into the pleural sac.

These facts were clearly explained by the demonstration made. There were a great many other interesting points in the demonstration which he said he would like to touch upon, but time did not permit. They all were certainly indebted to Dr. Fetterolf and to Dr. Gittings for what they had presented.

DR. GODFREY R. PISEK of New York said that those who were engaged in teaching physical diagnosis to students should be specially indebted to the readers of the paper; it was worth while to come to Philadelphia to see such a demonstration. There were many anatomical variations brought out that were worthy of notice; for example, the relation of the lobes of the lung to the thoracic structures and to the chest wall. Some time ago he had occasion to need absolute and reliable information on this point and he had a great deal of difficulty in finding it, in fact he had to study the body itself to get the data he needed. A little patient of his was to undergo a negative pressure thoracic operation and the data he obtained proved to be of great assistance to the operator. Therefore he felt that he would go away to-night with a great deal of information and with many facts to study.

He asked Dr. Fetterolf whether he found that these relations which he had described held true for older children, those of two and five years of age.

DR. L. E. LA FETRA of New York said that a beautiful demonstration had been given them of the relation of the heart to the chest wall and the occupancy of most of the chest by the heart antero-posteriorly. This explained what they saw in young children when evidences of dullness were obtained by deep percussion over the left side of the back.

With regard to the early signs of pericarditis, was it the enlarged right auricle which gave the dullness in the fourth and fifth interspace? The demonstration showed that the dullness in the fourth right interspace was accounted for by the presence of the right auricle. This was a point that was very valuable, especially to those who were teaching students, as it confirmed the statement of Lees that the normal right auricle could be made out by percussion in this situation, and that when engorged

it produced dullness in the third or even in the second right interspace.

THE FREQUENCY AND SIGNIFICANCE OF ALBUMIN IN THE URINE OF
NORMAL CHILDREN.

DRS. S. MCC. HAMMILL and K D.. BLACKFAN of Philadelphia presented this paper. For some years they had been impressed by the frequency with which albumin had been present in the urine of children in whom they had been unable to detect abnormalities which they considered sufficient to account for the albumin. Stimulated by these findings, they undertook the studies set forth in their paper. Examinations were made of 124 presumably normal children. In their summary they stated that the specific gravity had borne no definite relationship to either the form or amount of albumin. Variations in the reaction had no influence upon the albuminuria. In none of the cases examined did they find sugar, acetone, or diacetic acid. These substances might, therefore, be considered as having no bearing upon the occurrence of albumin in these cases. In 254 examinations, indican was present twenty times, phenol thirty-seven times, and urobilinogen twenty-one times. While albumin was associated with these bodies in the majority of the instances, It was sometimes absent when they were all present, and the amount was never greater when associated with them than it was in the cases in which they were absent. They did not find any evidence that crystals, when present in amounts found in normal children, were in any way responsible for the associated albumin. The amounts of albumin varied in the same way when associated with crystals as when present without them. Mild disturbances of the intestinal digestion in apparently normal children, which were discoverable only by an examination of the stools, were not sufficient to account for the albumin. In a few instances in which they compared the results of the examinations of the urine voided when on a mixed or on an exclusive milk diet, they found no difference in the amount of albumin eliminated. In forty-nine children in whom they studied the effects of posture they found none in whom the conditions corresponded to the accepted requirements for postural or orthopedic albuminuria, a rather surprising result in view of the frequency with which this condition was supposed to occur. The study of the presence of casts and cylindroids in these cases showed that twenty-eight children, or 22.5 per cent. had occasional hyaline casts associated with cylindroids, and six had cylindroids without casts. Taking the total number of specimens, forty in number, they found that casts and cylindroids were associated thirty-three times, and cylindroids were present alone seven times. Of the thirty-three specimens showing both casts and cylindroids, one showed no albumin, twenty-six showed a very slight trace of nucleo-albumin, one a trace, two a slight trace, two a very slight trace of

serum albumin, and one a very slight trace of both serum and nucleo-albumin. Of the seven specimens showing cylindroids alone, two showed no albumin, three a very slight trace of nucleo-albumin, and two a very slight trace of both albumins. There were some observers who considered the presence of casts in any number a necessary indication of an actual lesion of the kidneys, but they did not concur with this opinion. They were inclined to believe that these occasional casts were rather the products of a temporarily overtaxed kidney, resulting from variations in the habits of life of the individual which were often too slight to be recognized. In the urines of 124 children they found albumin at some time in 110, or 88.7 per cent. It was present in two forms, serum albumin, and an albuminous body which was precipitated by acetic acid in the cold. For the purpose of convenience they used for the description of this latter body the term "nucleo-albumin." The proportions of the different albumins present in these 124 children were as follows: thirty-four, or 27.4 per cent. showed serum albumin alone four times and in combination thirty-times; 106, or 85.4 per cent. showed nucleo-albumin alone seventy-six times and in combination with serum albumin thirty-times. In other words, this so-called nucleo-albumin was present three times as often as serum albumin. They were convinced that these figures did not fairly represent the frequency of occurrence of either of these albumins. They were inclined to believe that had they examined not only the twenty-four-hour quantities, but also a number of samples voided at different hours of the day and continued these examinations over a period of days, they might have been able not only to demonstrate the presence of nucleo-albumin at some period in the urine of every child examined, but also to have increased considerably the percentage of cases showing serum albumin. Believing, therefore, that it was possible to demonstrate in the urine of every presumably healthy child traces of an albuminous body precipitated by acetic acid, they were naturally forced to the conclusion that its presence could not be considered an indication of a lesion of the kidney, and that it must be regarded as an exceedingly common, if not a constant manifestation in the urine of children under twelve years of age, and that such traces consequently were of no clinical significance. As for the interpretation of the serum albumin, they believed that the cause suggested for the occasional presence of casts and cylindroids was quite sufficient to account for its occurrence in the amounts in which it had been present in the urines they had examined, for it must be borne in mind that in all of their cases neither the nucleo-albumin nor serum albumin had ever been present in more than traces and, in the vast majority of cases, in very slight traces.

DISCUSSION.

DR. HENRY DWIGHT CHAPIN of New York said that the paper read by Dr. Hamill was of very great value as confirming perhaps the opinion of some of those present, although they had not had such exact proof as he had given. Some years ago he made a study of infants with bodily disturbances which was followed by the presence of albumin and casts in the urine. Eighty-six cases of gastrointestinal disease, not selected cases, were first studied; seventy-five of those showed albumin in the urine; thirty-seven showed casts of various kinds. Fifty-seven pulmonary cases were next studied; they varied from a very mild to a very severe form of bronchitis and pneumonia. Forty-nine of these showed a trace of albumin in the urine; thirty-two showed both albumin and casts. He then took a series of forty-five cases of general illness, none of them being selected; of these thirty-one showed the presence of albumin in the urine. It seemed to him that so far as infants were concerned any bodily disturbance might throw down albumin and casts; this had no significance in the prognosis or treatment; it was simply due, in his opinion, to some irritation to the renal tubules and was without any significance.

The series of cases reported by Dr. Hamill were cases in health; whereas the ones he had studied were ill. Dr. Hamill's paper he considered a very valuable one and one that should be read at one's leisure.

DR. HOWLAND said: These studies of Dr. Hamill and Dr. Blackfan have both a practical and a theoretical interest. They show plainly the very great frequency of albumin in the urine of perfectly healthy children. We, all of us, have realized that albumin with or without a few casts in an otherwise normal child does not necessarily mean nephritis, but I doubt if any of us have recognized heretofore how very common a finding that is. It only goes to show that valuable information can be obtained from a sufficient number of careful examinations. Under ordinary circumstances we would not be apt to think much of an occasional trace of albumin, but after scarlet fever or diphtheria such a finding would occasion considerable concern. In such a position it would be comforting to know that albumin especially that precipitated by 50 per cent. acetic acid is regularly and almost normally present at some time.

A theoretical interest attached to the question whether these may not be instances of alimentary albuminuria.

It is possible to produce in men and animals by the feeding of excessive quantities of albumin an alimentary albuminuria just as it is possible to produce by sugar an alimentary glycosuria. Murlin was able to show that gelatinuria results after dogs are fed on large quantities of gelatine and Müller is authority for the statement that white of egg appears in the urine after

its excessive ingestion, but others have been unable to determine the character of the albumin that appears; chemical methods fail. Gideon Wells attempted to show it by anaphylactic experiments, but could get no evidence of the presence of any albumin but serum albumin. With children it is possible that the question may be somewhat different. The intestines and kidney of the young are more permeable to foreign substances. This can be demonstrated, for bacteria and the interesting observations of Wile seem to show that starch granules as such can be absorbed from the intestines, traverse three sets of capillaries, and be excreted in the urine. Recently Hecker has attempted to prove the presence of foreign proteins in the urine of children with albuminuria by precipitin tests. He obtained a precipitate with the serum of an animal immune to beef protein in about 25 per cent. of his cases, but precipitin tests are somewhat unreliable and cannot be accepted as entirely conclusive. It would seem, however, that with the increased permeability of the child's intestine there is a greater opportunity of foreign albumin being absorbed and excreted by the kidneys and it would be interesting to see whether the albuminuria in such cases as Dr. Hamill has investigated could be entirely prevented by a temporary diet without meat, eggs or milk.

DR. FLOYD M. CRANDALL of New York said that the paper read was one of great importance and was in line with what he had felt, that traces of albumin in the urine of children, as a rule, meant very little. He was surprised, however, at the frequency of such finding in investigations that were so accurate and so closely observed. They must prove of great value to the practitioner in interpreting conditions seen in every-day work.

DR. WARD BRYANT HOAG of New York wished to voice the sentiments already advanced; there was an immense amount of work manifested in the paper presented; the work of Dr. Hamill was most interesting but it brought up certain vital questions.

How do we know *which patient* having albumin has it left over as the sequel of a previous unrecognized acute nephritis?

Having albumin as a sequel of an acute unrecognized nephritis, what are the possibilities of another acute attack?

Admitting the possibilities of the above first question, can we pronounce these patients normal?

He reported a case in point. A boy born in the tropics suffered almost constantly because of malaria. He came to New York City when about six years of age when Dr. Hoag first saw him. At that time he apparently was a healthy child. He was given a pair of roller skates and became overheated and sat down on the sidewalk. After a week or so Dr. Hoag was called in to see him and found him edematous from head to foot with a large amount of albumin in the urine. Whether this was an acute attack the result of the inordinate use of the roller skates and exposure or an exacerbation of an old nephritis contracted at the time of his malarial infection he could not say.

However, the nephritis all cleared up except for a trace of albumin. Now the boy was ten years of age, but there was remaining a distinct trace of albumin in his urine. There were no casts or epithelium other than squamous present; the question was, What were the possibilities in regard to his future? Was this trace of albumin, together with his history, a menace to his future? What would happen if at the end of ten or fifteen years he applied for life insurance? Would he be accepted as a good risk? To-day he apparently was perfectly healthy, robust, and active. But was he "normal"?

DR. ELIAS H. BARTLEY of Brooklyn said that these examinations of the urine of children were certainly very helpful to them; they frequently had occasion to examine the urine of children and frequently they found albumin present. The finding of a trace of albumin in the urine he regarded as having no pathological significance; it often appeared after active play of children, after exposure to cold, etc.

With regard to the nucleo-albumin, Dr. Bartley said he had always regarded that as a normal constituent of the urine of both children and adults; this was a normal secretion from the epithelial cells of most of the mucous membranes. What was called mucus in the urine was present in almost all urines and contained practically no mucin. Therefore the term mucus was rather misleading and confusing. The term now generally employed was "mucoid substance" and this was made up of nucleo-albumin. Nucleo-albumin was almost always present in the urine in traces, and very often in quantities large enough to be precipitated by 50 per cent. acetic acid. The slightest irritation of the mucous membrane or of the epithelial cells lining the kidney tubules, such as by a strongly acid urine, or crystals of uric acid or oxalate of lime would produce this.

There was no constant relation between the presence of casts and albumin in these cases. The casts as a rule were hyaline and not granular. They should regard the latter as positive evidence of a disintegration of the kidney structures with a granular deposit in the hyaline material. Hyaline casts alone were of little significance, being of little more significance than cylindroids. It was very difficult to distinguish cylindroids and hyaline casts. Therefore, he believed that the presence of cylindroids, a few hyaline casts, and traces of albumin in the urine of children should be regarded as the result of a slight irritation of the tubular epithelium, and they were of no other significance.

DR. ALFRED HAND, JR., DR. C. Y. WHITE, and DR. JOHN REICHEL presented a

REPORT OF A CASE OF RABIES.

The patient, a girl five years old, was bitten in the face by a mad dog; the wounds were cauterized and healed promptly. Seventeen days later she developed fever and became very restless and excited; on the third day she was admitted to the Chil-

dren's Hospital with a history of frothing at the mouth and dreading the sight of water, but these latter symptoms were not noticeable after admission; the excitement was so great as to amount to a true mania, differing from ordinary delirium in lacking incoherence. Meningitis was excluded by lumbar puncture, and there were no signs of pneumonia, typhoid fever, or endocarditi. The temperature was 105° until a few hours before death when it rose to 109.40 ; the pulse ranging from 180 to 200.

The case illustrated *a.* the susceptibility of childhood to rabies, two-fifths of all cases occurring under fifteen years of age, and *b.* the shortness of incubation when the face or hands are bitten, because of the great nerve supply, the extension of the virus being along the nerve trunks and the symptoms appearing when the central nervous system is reached. The incubation-period is rarely longer than ninety days. In adults, women are less predisposed than men, because of their lessened exposure and the greater protection offered by their clothing. The general susceptibility of human beings to rabies is not great, only 17 per cent. of those bitten by rabid animals developing the disease, but the mortality among those who do develop it is practically 100 per cent.

Three stages of the disease are described, more or less sharply defined, the premonitory, with restlessness, moderate fever and sensory disturbances in the scar; the excited, with higher fever, attacks of mania intermitting with periods when the patient is rational, painful spasms of the laryngeal and pharyngeal muscles so that swallowing is difficult or impossible, with hydrophobia or dread of the sight of water, and the omission of strange sounds often likened to the bark of a dog, and possibly general convulsions; the paralytic, with stupor deepening into coma.

The autopsy in the case reported showed only secondary changes such as cloudy swelling in the liver and kidneys and moderate congestion of the lungs. The meninges showed no changes such as cloudy swelling in the liver and kidneys and exudate and cultures were sterile. Smear preparations from the cerebellum showed Negri bodies in the cells of Purkinje and an emulsion of the cerebellum injected into two rabbits was followed by the death of one twenty-five days later, the Negri bodies being easily demonstrated in the hippocampus major.

In the Laboratory of the Pennsylvania State Livestock Sanitary Board studies have been made on eight cases (seven children and one adult), two of which were negative, the six remaining showing Negri bodies and the disease being reproduced experimentally, from each case.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Blood Transfusion in Hemophilia.—The patient of C. Goodman (*Ann. Surg.*, Oct., 1910) was a male two and a half years of age who had sustained in falling a lacerated wound of the cheek and mouth, from which blood was oozing twenty-four hours later. The body was almost covered with ecchymotic spots. Since birth the child had developed black and blue spots upon the slightest injury. Ritual circumcision was followed by bleeding for several days. A wound of the finger bled for two weeks and a cut gum oozed for several months. During the first two days, the following measures were used to check the bleeding: Application of adrenalin chloride, nitrate of silver, ice, and pressure with pledgets of gauze. Calcium chloride was administered by mouth, also tinct, ferri chloridi. These were followed by calcium lactate and saline solution per rectum, and saline hypodermoclysis. On the morning of the second day 20 c.c. of diphtheria antitoxin were administered in two doses hypodermically. Blood was vomited during the first day after admission and the stools next day were blood-stained. While hemolytic, Wassermann and Noguchi tests were being made; 5 c.c. of fresh rabbit-serum was injected and for a few hours the oozing seemed to stop, but on the following morning the temperature was 102° , and the pulse, which during the night had reached 180, had become imperceptible. The blood showed 12 per cent. hemoglobin and less than 1,000,000 red cells. Immediately after transfusion the pulse was regular, of good quality and 140; the color was good and the hemoglobin 70 per cent. Seven weeks later, after three weeks at the sea-shore, the blood showed 5,000,000 red cells and 80 per cent. of hemoglobin. Later, cellulitis from an infected scalp wound required extensive incisions, but the wounds healed without hemorrhage. The mother gave birth to another male child a few weeks after the transfusion of this patient and he also was treated for continued bleeding after circumcision.

Herpes Facialis in Scarlet Fever.—J. D. Rolleston (*Brit. Jour. Dermatol.*, Oct., 1910) bases his observations on 413 cases of scarlet fever. Herpes facialis was noted in twenty-seven cases, or 6.5 per cent., a figure slightly exceeding that found in diphtheria, in which it occurred in 4.2 per cent. of 1370 cases. Scarlet fever comes fourth in the list of acute infectious diseases in which figures of the frequency of herpes facialis are available, following at a long distance pneumonia, malaria, and cerebrospinal meningitis, in each of which it occurs in about 40 per cent. No diagnostic importance can be attached to herpes facialis in scarlet fever, the eruption being almost equally frequent in scarlet fever and diphtheria, and much commoner in angina due to other causes, in

which it was found in 13.1 per cent. As regards the prognostic value of herpes facialis, as in diphtheria, the eruption was more frequent in the severe than in the mild cases, being found in thirteen cases, or 12.6 per cent. of the former, as compared with fourteen cases, or 4.1 per cent. of the latter. In spite of its greater frequency among the severe cases, none of those presenting the eruption proved fatal, so that it cannot be regarded as an unfavorable sign. The possibility of a pneumococcal infection in herpes labialis must not be forgotten, even in the absence of a pulmonary localization.

Pyelocystitis in Infancy.—In recording a series of eighty cases of pyelocystitis, E. B. Friedenwald (*Arch. Ped.*, Nov., 1910) found fifty-eight females and twenty-two males, giving the unusually large percentage of 27.5 males. This is more than double the highest percentage, 11, previously reported, and suggests that the frequency of the occurrence of this affection in male children may have been underestimated.

Colon-bacillus Infections of Urinary Tract in Children.—L. Porter and E. C. Fleischner (*Arch. Ped.*, Nov., 1910) divides these cases into 5 types: 1. A true bacilluria with no symptoms excepting perhaps slight malnutrition and anemia. 2. Subacute or chronic cases with pallor, failure to gain weight, slight but increasing rise of temperature, and especially gastrointestinal symptoms such as anorexia, occasional vomiting, numerous greenish stools with mucus, and later constipation. 3. Severe cases with symptoms of intestinal intoxication and sometimes bladder symptoms. 4. So-called typhoidal type, acute onset, irregularly high temperature and other symptoms of toxemia, without local urinary symptoms. 5. Cases with distinct urinary symptoms such as frequent and painful urination and sharp rise of temperature followed in some instances by pain and tumor in the region of the kidney. These cases are usually surgical. The general symptoms are those of a severe intoxication. The treatment of colon-bacillus infection of the urinary tract includes cleanliness of the genitals, rest in bed, ingestion of large quantities of water, 15 gr. of urotropin well diluted daily. In the more severe, persistent cases autogenous vaccines are most effective. They should be given in as large doses as can be employed without producing a marked reaction and repeated at four-day intervals. Chronic cases demand similar treatment, but without confinement to bed, and everything which will improve the general condition.

Contribution to the Study of Anaphylaxis.—Ugo Calcaterra (*Rev. di clin. ped.*, Nov., 1910) reviews the experiments in anaphylaxis made by various observers, and recites certain experiences of his own which are of interest. The factors in anaphylaxis are a dose of an infectious agent, the sensibilizing dose; an incubation period of sufficient length to allow the acquirement of hypersensitivity; a second dose of the infectious agent, which causes the appearance of anaphylactic phenomena. The period of

incubation is from ten to twelve days. In guinea-pigs convulsions and paralysis are caused. Many disturbances attributed to idiosyncrasy may be manifestations of anaphylaxis. Intolerance for milk in infants may be due to anaphylaxis. The deaths supposed to result from the use of sera may be caused by anaphylaxis. The author has made experiments in connection with Comba with intrarachidian injections of diphtheritic antitoxin. The diphtheritic toxin fixes itself especially on the nervous system. It has been thought possible to prevent this by injecting the antitoxin into the spinal canal. In a child recovering from diphtheria who had paralysis of the palate an injection was given into the spinal canal, twenty-two days after the first injection of antitoxin. An hour after the second injection violent vomiting came on, headache, grave general depression with small, frequent pulse. These symptoms disappeared in four days. Another similar case was seen. Several other children injected in the same way experienced no trouble at all. The author concludes that we should act with great caution in reinjecting cases of diphtheria which have received one injection of antitoxin some days or weeks previously.

Congenital Hypertrophic Stenosis of the Pylorus. J. H. Nicoll (*Practitioner*, Nov., 1910) believes that for the excessive mortality rate of this condition surgeons and physicians are equally responsible. The former fail to recognize that for the slighter cases, serious, and in very feeble infants desperate, operative measures are unnecessary, and that dietetic treatment is effective. The latter are not fully alive to the fact that for the really severe cases treatment on dietetic and medical lines is futile, and continue it until such enfeeblement is present as precludes all hope of successful operation. As to the diet suitable, no rules of any value can be formulated. Often the food which would appear to be ideally the worst possible succeeds when many of the theoretically perfect fail. Frequent changes are necessary. If a particular food does not "stay down" after a three days' trial, it should be abandoned for another. 2. If after three weeks' dieting, even in cases of apparently minor degree, vomiting still persists, dietetic treatment should be abandoned, and operation undertaken while strength remains for the ordeal. Vomiting which persists under systematic feeding for three weeks rarely yields to any form of food. The writer feeds his patients on a form of very thin paste made by mixing, with milk, flour which had been baked. If the baked-flour food fails, operation should be resorted to. Dietetic treatment alone is curative in a large proportion of the slighter cases. Its undeservedly high reputation rests on three fallacies: erroneous diagnosis, temporary improvement, and an exaggerated estimate of the mortality attending operation.

Intussusception.—A review of the clinical features of 100 consecutive cases of intussusception by J. E. Adams (*Practitioner*, Nov., 1910) showed that 70 per cent. occurred in children under

one year and that the commonest age period was between six and nine months. Sixty-six per cent. were boys. That intussusception is not more common during the prevalence of "diarrhea and vomiting" than at other seasons of the year is shown by the fact that fifty-seven of the cases belonged to the first six months and forty-three to the second half of the year. Probably the influence of diet, if any, is due to the addition of undesirable solids to a previously fluid food. In only four cases was there a history of attacks of diarrhea and vomiting prior to the intussusception, but constipation had been noted in twelve. In only one case was there a history preceding traumatism. Of the symptoms of intussusception pain is the most constant. It was absent in only one case. Vomiting was recorded as present in ninety, absent in six cases. Blood, usually accompanied by mucus, was passed in 83 per cent., but in children under one year of age the percentage reached 92. Constipation was present during the attack in 33 per cent., diarrhea in 13, abdominal distention in only 22. Localized rigidity over the tumor is not uncommon, so palpation under chloroform is often necessary. The presence of an abdominal tumor is the essential sign of intussusception. It may be felt in any part of the abdominal cavity. Of these 100 cases sixty-eight possessed a tumor which could be easily felt, nineteen required the relaxation of an anesthetic to reveal it, while in twelve no tumor could be found, but eleven of these did not have chloroform administered for the sake of palpation, most of them being too ill for any interference. Rectal examination should be a routine measure in all acute abdominal diseases. Its value is shown by the results in the writer's 100 cases: in twenty-seven the apex of the intussusception was felt; in five others the tumor was revealed by bimanual examination; in a number of the negative cases the examining finger was stained with blood. Ninety-one of the series were operated upon with an operation mortality of 35.1 per cent. In cases where only the simplest surgical procedure was required it was 29.1 per cent., but if more than celiotomy and reduction were required it became extremely high. Since any operative procedure further than reduction has a very high mortality, probably the best course to adopt would be to operate under spinal anesthesia in any case where from the length of history, or the gravity of the symptoms, irreducibility or gangrene is suspected.

Preliminary Examination of Children at Dispensaries to Limit Contagion.—S. Welt-Kakels (*Med., Rec.* Nov., 26, 1910) say that there is at the present time an evident lack of prophylaxis in handling contagious cases at the dispensary. As at present conducted, dispensaries contribute to the dissemination of infectious diseases among the poor by contact infection in the common waiting-room. If not entirely eliminated, the danger of exposure is lessened by the preliminary inspection of children, a prophylactic measure which aims at an early detection and ex-

clusion of contagious cases and "suspects" before entering the common waiting-loom. Preliminary examination of children has been conducted at the Mt. Sinai Dispensary since April, 1907, with satisfactory results. Its establishment in similar institutes is required as a sanitary safeguard and on the ground of public economy.

The Lungs in the Cardiopathies of Childhood.—Hutinel (*Presse méd.*, Oct. 26, 1910) says that the pulmonary symptoms observed in children who have cardiac lesions are not the same as those found in adults. Edemas have neither the same location nor the same appearance; congestions do not localize in the same organs or have the same characteristics. Very loud cardiac murmurs are heard, but there is rarely arrhythmia as in adults. In spite of the gravity of the circulatory troubles in children who have valvular and pericardial lesions the lung remains relatively unaffected. In cases of extreme dyspnea in children the edematous congestion of the bases is absent, the bronchi secrete less, and the râles are fewer than in adults. Pulmonary apoplexy, which is frequent in the adult, is rare in children. Seromucous and often blood-tinged expectoration, which characterizes the edema of the adult, is seldom seen in the child. Hydrothorax from blood stasis is also infrequent. The lungs are affected in a different way from the adult. These differences frequently cause errors of diagnosis. There is a more frequent coexistence between affections of the pericardium and of the pleura than in the adult. The lymphatic communications between the two serous membranes are free, and lesions are easily propagated from one to the other. Coexistence of a double pleurisy with an endopericarditis is characteristic, and suggestive of a rheumatic affection. Whenever you see a severe pericarditis in a child examine the pleura and the lungs; conversely in pleurisy, especially on the left side, explore the precordial region. In the thorax of the child the space is limited and if the heart is enlarged the middle of the left lung is compressed, its density is increased, and atelectasis is frequent. There are bronchial breathing and dulness, lower down than in affections of the bronchial glands. Thus in cardiac disease of children we get modifications of the respiratory murmur, and dulness, which suggest pleurisy, bronchopneumonia, and tuberculosis.

Inflammatory Tuberculosis and Scoliosis.—Antonin Poncet and René Leruche (*Gaz. des hôp.*, Oct., 6, 1910) combats the idea that scoliosis is a result of bad position in school. It is more frequently found in the ages from eight to thirteen years, the time when most children are at school, but the position in which the child sits for writing is taken for so short a time each day, and position is so frequently varied in the schools of to-day that the authors think that it is much more likely that faulty positions are an adjuvant to another determining cause of this trouble. This determining cause they find in infections, and particularly the inflammatory form of tuberculosis. Vertebral deviations are found especially in children who live under unhygienic conditions, with insufficient

nourishment, physiological overwork, and with other pathological conditions such as imperfect convalescence from infectious diseases. Scoliosis is found to be present among animals as well as among men, as is shown by the exhibits in the museum of Dupuytren in the collection made by Bouvier. The true cause of scoliosis appears to be a flexibility of the bones, from alteration of the osseous tissue during the period of growth and ossification. Anatomical investigations of the spine in cases of scoliosis that have come to autopsy show osseous neoformations, partial union of neighboring vertebræ, exostoses, ossification of the ligaments, and vertebral ankyloses. These conditions often begin immediately after recovery from some one of the infectious diseases, or are aggravated after an attack of scarlatina or diphtheria, and we are thus led to suppose that some infection must be sought for as a cause of abnormal softening, and lessened resistance of the spinal structures. The author believes that many of these children are in the pretuberculous stage. The curvature results from a vertebral osteomalacia for which inflammatory tuberculosis is often responsible. The same tuberculous pathogeny is the cause of other malformations of childhood, osteoarticular troubles of childhood and adolescence, *genu valgum*, exostoses, *coxa vara*, etc. These are deformities acquired in the same manner, similar in every way to scoliosis, and generally considered as results of a late rickets.

The Meiotagminic Reaction in Tuberculosis of Children.—L. Concetti (*Il Policlinico*, Oct. 30, 1910) made a test of the value of the meiotagminic reaction in thirty-six children suffering with various forms of tuberculosis, and found it positive with all of them. In twenty control cases of other diseases it was absent in all. The value of this reaction is greater because it is found that the cutaneous reaction is absent in children in miliary tuberculosis and in tubercular meningitis, and in these cases the meiotagminic reaction was found present. In babies it is impossible to examine sputum in many cases of pulmonary involvement because of impossibility of collecting the sputum.

Assistance in the Treatment of Infantile Paralysis by the School Physician.—Marie Serena (*Gaz. med. di Roma*, Oct. 30, 1910) thinks that if the school physicians would undertake to see that the children who have suffered from infantile paralysis, when they return to school should have proper orthopedic treatment we should have less cripples and candidates for schools for incurables. It is a mistake to feel that the use of electricity should be delayed long after the beginning of the disease. It may begin as soon as the acute symptoms have subsided. Massage and passive movements will prevent the formation of contractions which would later prevent getting good results from surgical operations. Electricity should be given carefully, the paralyzed muscles being selected, and pains taken not to overdevelop the sound muscles, instead of aiding the paralyzed ones. The school physician has the op-

portunity of caring for these children at a time when they have lost their interest for the family physician, and have come back to the school routine unable to enter into the sports of their companions, but ready to apply their brains. If not cared for properly now they will lose ground physically and their muscles will become weaker.

Lymphocytosis of the Cerebrospinal Fluid in Acute Epidemic Poliomyelitis.—H. Eschbach (*Prog. méd.*, Oct. 22, 1910) says that all affections of the spinal cord are accompanied by a reaction of the membranes. In some of the atypical cases of poliomyelitis the symptoms due to meningitis reaction are more prominent, especially in the beginning, than the paralytic phenomena. Hence many cases of anterior poliomyelitis have been diagnosed wrongly as meningitis. The examination of the cerebrospinal fluid has confirmed the diagnosis of irritation of the meninges. If the fluid contains polynuclears it appears to confirm the diagnosis of cerebrospinal meningitis. Lymphocytosis is generally present in acute syphilitic meningitis as well as in anterior poliomyelitis. The author gives the history of a case in which the malady began with an acute rise of temperature, headache, vomiting, and stiffness of the neck. Lumbar puncture showed lymphocytosis, and a diagnosis of cerebrospinal meningitis was made. On the fifth day the child showed a paraplegia, and the evolution of the disease showed it to be poliomyelitis. In classical cases of this disease the meningeal reaction is not present; but in epidemic poliomyelitis it is especially frequent. Thus we see that in acute cases that are doubtful we should wait for a positive diagnosis until the evolution of the disease makes it quite evident what we have in hand.

Diagnosis of Nasal Diphtheria in New-born Children and Nurslings.—Blochmann (*Berl. Klin. Woch.*, Oct. 31, 1910) says that the commonest location for the occurrence of diphtheritic membrane in young babies is the nasal mucosa. The appearance of the infant is generally quite characteristic. Fibrinous masses appear at the nostrils and may even hang down over the upper lip. In some cases there is only an irritating discharge from the nostrils, but if the tip of the nose be pushed up we are able to see the membrane inside the nostrils. The examination is made with the child lying down; the entire anterior half of the nasal cavity may be seen, part of the floor, and the anterior third of the septum. The favorite location for membrane is the septum. The author is of opinion that we should make a rhinoscopic examination of every case of nasal discharge in a young baby during an epidemic of diphtheria.

Complications of Mumps.—V. Hutinel (*Bull. méd.*, Oct. 29, 1910) says that although mumps is generally purely local and a benign affection, still there are several possible complications that result very badly for the victim when the infection becomes generalized. It acts like a true septicemia. The complications result from the localization of the microbes of mumps by me-

tastasis in remote organs; they may disappear leaving permanent traces. The most serious complication is orchitis, which frequently leaves behind it an atrophy of the testicle and permanent sterility when both testicles are involved. The symptoms may be very threatening, convulsions and high fever accompanying them. Oophoritis is much more rare and less severe, but the mammary glands may be attacked. Pancreatitis is also known; the suprarenals may be affected; a meningitis may appear, the symptoms being characteristic and being confirmed by lumbar puncture. In general these attacks of meningitis result in recovery. The nerve trunks may be injured either by the meningitis or by direct inflammation. The author cites a case of facial paralysis with nephritis following mumps. The sensory nerves may also be attacked. Optic neuritis and retinitis are rare. The nephritis recalls the interstitial type of the adult rather than the usual nephritis of childhood. Articular pains, erythemas, pericarditis, and endocarditis are possible complications.

Percentage of Eosinophile Leukocytes in Children.—O. M. Schloss (*Arch. Int. Med.*, 1910. vi, 638) calls attention to the general opinion that in infants and children the normal percentage of eosinophiles may be much greater than in adults. He has investigated this matter by the examination of the blood of eighty infants and children between three days and twelve years of age, excluding cases of manifest illness and those giving a history of any disease which is a recognized cause of eosinophilia, and attempting to exclude parasites by examination of feces. He finds that in apparently normal infants from three days to two months of age, the eosinophiles are frequently above the percentages normal for adults. In normal individuals between two months and twelve years of age, when the known causes of eosinophilia are excluded, the eosinophiles are rarely above 5 per cent. and never greater than 6 per cent. and are present in approximately the same relative proportions as in adults. It is concluded that there is no physiological eosinophilia in children and that 5 per cent. of eosinophiles may be considered the upper limit of normal and more than 6 per cent. certainly abnormal.

Histological Modifications of the Hypophysis and Spleen after Thymectomy.—Ch. Perrier (*Rev. méd. de la Suisse Romande*, Oct. 20, 1910) cites the interrelation of the glands of internal secretion as it is seen in exophthalmic goiter myxedema, cretinism, Addison's disease, and acromegaly, with persistence of the thymus. He endeavors to ascertain whether as in ablation of the other glands, thymectomy modifies the structure of the hypophysis. He made a study of young rabbits studying the influence of thymectomy on development, and the structure of the hypophysis after thymectomy. He finds that after thymectomy there is an increase of the number of chromophilic cells, and a grouping of similar cells forming acidophilic or basophilic masses. The thymus is therefore connected with the hypophysis like the

other glands, as is proved by the modifications of the latter when the thymus is operated upon. The spleen was examined after thymectomy. The modifications consist in an increase in the reticulum and a hyperplasia of the lymphatic tissue, marked by the presence in the follicles of large germinative centers, the appearance of small young follicles, and an increased cleanness of the follicular borders. The conclusions arrived at are that thymectomy practised on young animals retards development in a transitory way; the hypophysis shows modifications after removal of the thymus; the spleen, after removal of the thymus, shows changes of structure indicating a vicarious functional hyperactivity.

Barlow's Disease.—A. B. Marfan (*Ann. de méd. et chir. inf.*, Nov. 1, 1910) tells us that Barlow's disease shows itself in general about the age of ten months; it is characterized by anemia, pains in the bones, subperiosteal hemorrhages, especially in the lower limbs, and ecchymoses of the gums when the child has teeth. It often is coexistent with rickets. It is rapidly cured by a change to antiscorbutic diet. There are changes in the bones of the limbs and skull. Of the latter the most serious are the changes in the orbit, causing exophthalmus and thickening of the upper lid with ecchymosis. The sternum and cartilages of the ribs are depressed, due to fractures of the anterior extremities of the ribs. The alterations are generally symmetrical, but may differ in degree on the two sides; the symmetrical lesions do not appear on the two sides at the same time, but succeed one another at a short interval; the intensity of the anemia is in relation with the number and size of the hematomas. There are a hematuric form, a latent form, and anomalies of position of the hematoma. The duration is from three to six months. In some cases the hematoma suppurate from secondary infection. The osseous lesions consist of subperiosteal hemorrhages, fibrous transformation of the red marrow, and resorption of the chondrocalcereous layer. The special location of the hematoma is the lower part of the femoral diaphysis. The periosteum is separated all around the bone and appears like a very vascular membrane. Between the periosteum and the bone is a large blood clot. The periosteum is encrusted with bony deposits, an indication of the preservation of the osteogenetic function. These deposits account for the extreme hardness of the hematoma. Osseous rarefaction is a constant lesion; it occurs even in bones that are not involved in hematoma, and results in multiple fractures of the bones. The microscope shows that the cause of this condition is the disappearance of the osteoblasts in the forming bone trabeculae under the periosteum. The most generally accepted theory of Barlow's disease is that it is a form of infantile scurvy. It resembles adult scurvy in that both are caused by the absence from the diet of necessary natural products. It generally occurs in bottle-fed babies who have been fed on farinaceous foods, sterilized milk, or boiled milk. It appears only when these materials have been given for a long period of time.

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ORIGINAL COMMUNICATIONS.

MULTIPLE CESAREAN SECTION WITH THE RESULTS IN
THIRTY-NINE CASES, DONE AT THE NEW YORK
LYING-IN HOSPITAL.¹

BY

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IN the consideration of the permissibility of subsequent pregnancies in a patient on whom a Cesarean section has already been performed, the main query which arises in the minds of all thoughtful and conscientious surgeons is as to whether or not they shall sterilize the patient at the time of the first Cesarean section, thereby rendering impossible a future conception. In this regard it would seem as if the operators who advise and follow such a radical procedure take upon themselves fully as much responsibility as is desirable for them to assume, inasmuch as the principle involved is not alone one of medicine or surgery, but is also of considerable ethical importance, both to the community in general as well as to the husband and wife in particular.

Much has been written on this subject and many authors present views widely at variance with each other. Green (1), considers that it is not justifiable to sterilize the woman in any case, stating that if after Cesarean section pregnancy ensues the responsibility rests with the obstetrical surgeon, but that the responsibility for the woman's condition rests elsewhere. Polak (2), in an exhaustive article on this subject, believes that the following questions are necessary for discussion: First, "The ethical ques-

¹ Read at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September 20-22, 1910.

tion and its importance to the community and the parties concerned." Second, "The dangers to which the woman is subjected by repetition of the operation in cases of Cesarean section following pregnancy, as well as the possible danger of rupture in succeeding pregnancies." He believes that the question is one to be decided from a scientific point of view, and that in every case, after recovery from the first Cesarean section, the patient, her husband, and her immediate family, should be informed of the prognosis and treatment in the event of her again becoming pregnant. DeLee (3), remarks, "The question as to whether either parent has the right to demand that either be rendered sterile, is one that cannot be answered offhand. It is very broad and involves the principle of sociology, ethics, and religion." Sinclair(4), does not approve of sterilization except in special cases, such as fibroids, carcinoma, etc., both on moral grounds and on account of the greater gravity of the operation, due to the extra amount of time consumed. Garipuy(5), considers that the operative difficulties involved in multiple Cesarean section may require certain modifications of the technic, but that sterilization is indicated only in a small proportion of the cases.

Such representative views as the foregoing may be safely taken, it is believed, as the opinion of the great majority of obstetricians who have devoted much consideration to this subject, and with them the writer is in hearty accord. All things being equal or nearly so, he believes that there is no more reason why a patient should be sterilized after Cesarean section than before, and hopes to be able to demonstrate this fact by the series of cases quoted below.

Let us take up the question now in its different phases and see what are the objections raised to the repeated operation and what, if any, are its dangers. These may be considered as, first, the ordinary risks of any laparotomy, such as sepsis, hemorrhage, shock and anesthesia; second, the dangers of rupture of the uterus through the scar of the previous operation; third, the formation of adhesions between the uterus and abdominal contents of the parietal peritoneum.

With our present knowledge of the technic of abdominal surgery in general and of the operation under consideration in particular, it does not seem as if the first question ought to be considered as a very serious one, and there should not be as much danger to the mother in a properly conducted elective Cesarean section as in a difficult high forceps, if indeed there is as much,

and practically none to the child. In connection with this statement the writer would observe that if in general more attention were paid to the surgical sterilization of the patient the necessity of considering functional sterilization of the same individual would be very much reduced. The patient should be carefully prepared, anesthetized by a competent anesthetist and the surgeon should have trained assistants. When the operation is begun it should be conducted deliberately with due care to the essential points of the technic as in any other abdominal operation, at the same time remembering that the speed consistent with careful work is desirable. A faithful observance of these points together with a careful closure of the abdominal and uterine wounds in the manner to be hereafter described, will, it is believed almost entirely obviate the other so-called objections already mentioned.

While a few cases of rupture of the uterus through the scar of a former Cesarean section have been reported by Hussey(6), Henkel(7), Schneider(8), Mabbott(9), the consensus of general opinion seems to be that the accident is not common, as indeed must be the case when one considers the infrequency of its occurrence compared with the number of secondary operations which are done. Polak(3), believes that the danger of rupture of the uterus in secondary cases is considerable, quoting Olshausen and Brodhead on this subject. Henkel(7), however, states that Olshausen had only one rupture of the uterine cicatrix in a series of 120 Cesarean sections. Fitzgibbon(10), believes that there is considerable danger of rupture of the uterine scar, particularly after the patient has labor pains, although he offers no evidence to prove his views. Some interesting observations in support of the opposite opinion have recently been made by Mason and Williams(11), who showed in experiments on dogs that by proper suturing the union of the scar is just as strong if not stronger than the uterine muscle and should therefore be able to stand any strain which the latter can stand.

From his own experience the writer believes that this is true, but considers that there are certain factors which are necessary in order to obtain a firm and satisfactory union of the scar. These are, first, rigid asepsis; second, a considerable amount of care in suturing the uterine muscle, particular attention being paid to being certain that the sutures firmly surround the whole uterine wall. These should be placed fairly close together and tied with considerable firmness, as they tend to loosen with the retraction of the uterus. Of no less importance is the overlapping of the

uterine peritoneum in the line of the interrupted sutures, thus burying them and reinforcing the scar. It is essential not to invade the endometrium with the uterine sutures, not only on account of the danger of infection, but also on account of the possibility of including the mucosa between the edges of the muscle. In this way foci of mucous membrane may in successive pregnancies be transformed by the ordinary method into decidual tissue, causing separation of the walls and subsequent weakening of the scar, thus allowing the uterus to rupture. In all probability many of the ruptures reported are due to this cause.

The next point in the technic consists of the high incision in the abdomen, and on this depends, to a large extent, whether or not adhesions are formed between the uterus and abdominal wall. Considering the formation of adhesions, Sinclair(12), believes that it is desirable to secure close and extensive adhesions between the anterior wall of the uterus and the parietes, claiming that by this means the formation of omental and intestinal adhesions is prevented, in an area which may become the field of a future operation. He has endeavored to bring about this result in several cases, but with only partial success. In this he is in accord with Green(13), who reports a case where extensive adhesions between the uterus and abdominal walls were so firm that in doing the Cesarean section the peritoneal cavity was not opened at all.

In an editorial in the *London Lancet* for 1906, the statement is made that every effort should be made to produce adhesions in order to make the succeeding operations extraperitoneal. The editor makes this astounding statement, "In cases where the patient is not sterilized, in view of the possibility of future pregnancies, an attempt should be made to insure the formation of extensive peritoneal adhesions," and then naively adds, "Unfortunately we have no certain method of obtaining this desirable result."

It seems to the writer that too much cannot be said in condemnation of a statement so absolutely unsurgical in its tendency, especially when coming from so important a source as this well known medical journal. One of the main efforts of modern abdominal surgery is to prevent the formation of adhesions in the peritoneal cavity, and it does not need a very fertile imagination nor an extensive knowledge to know what may happen and has happened in cases again growing pregnant after fixing the anterior surface of the uterus to the abdominal wall; the anterior wall be-

ing fixed, has but little chance to expand during the growth of the uterus with the result that most of the uterine enlargement has to take place in the posterior wall, thereby thinning it greatly and rendering the danger of rupture far greater than through a scar well sutured in a careful and proper manner. The formation of abdominouterine adhesions for the purpose of making an extraperitoneal operation during the second pregnancy (which may never occur), should be relegated to the place of irritating injections into the sac for the cure of hernia instead of radical operation, and the surgeon who deliberately tries to produce adhesions does not, according to the writer's view, give his patients the best results of modern surgery. Such adhesions may cause dragging pain, intractable vomiting and other disagreeable symptoms, which may last the patient through life, or at any rate until a more or less unsatisfactory operation has been performed for their relief and it certainly seems as if too much emphasis could not be laid on the operator's making every effort in his power to *avoid* the formation of adhesions and to feel that at the secondary operation the fewer such he finds the more successful was the technic of the first. In order that this happy result shall take place it is, as already stated, essential to make the abdominal incision well above the umbilicus so that when the uterine wound is closed and the uterus contracted, the upper pole of the fundus will be below the lower end of the wound in the abdominal wall. The second factor is the careful suturing of the uterine wound with an overlapping of the uterine peritoneum, covering the through and through sutures as described by the writer in a previous article on the subject (14). During the operation as little manipulation of the uterus as is consistent should be encouraged and it is well to give ergot beforehand in order to stimulate early contraction. If the surgeon bears in mind these few simple precautions and watches his asepsis the chance of adhesion formation should be reduced to the minimum, and the patient should at the close of twelve to sixteen days have the uterus well involuted into the pelvis in normal position, freely movable and ready to be forgotten until the next pregnancy.

In the past nineteen years we have had at the New York Lying-in Hospital thirty-nine multiple Cesarean sections, of which short histories are appended.

CASE I.—Y.W. Conf. No. 16382. Para V. Justo-minor pelvis. Second Cesarean section done on this service. At the time of operation the uterine scar was normal. There were a few slight

adhesions. A living child was obtained which died on the sixth day of hemophilia neonatorum. Mother was discharged well on the eighth day.

CASE II.—S.W. Conf. No. 10792. Para II. Second Cesarean section. In this patient the scar was thin. There were a few adhesions. The child and mother were both discharged well on the seventeenth day.

CASE III.—D.U. Conf. No. 14565. Para III. Second Cesarean section. The uterine scar was normal. There were a very few adhesions present. Mother and child discharged well on the fifteenth day.

CASE IV.—S.S. Conf. No. 10144. Para II. Second Cesarean section. Uterine scar of the previous operation could not be discovered. There were a moderate number of adhesions. Mother and child discharged well on the twenty-second day.

CASE V.—B.S. Conf. No. 15623. Para II. Second Cesarean section. Uterine scar was not to be found, and there were many adhesions between the abdominal wall and the uterus. Mother and child discharged well on the twenty-first day.

CASE VI.—J.S. Conf. No. 16039. Para III. Second Cesarean section. Uterine scar was not to be found. Many adhesions present. Mother and child discharged well on twenty-third day.

CASE VII.—M.S. Conf. 7566. Para II. Second Cesarean section. Scar of previous operation normal. No adhesions present. Mother and child discharged well on the twenty-fourth day.

CASE VIII.—M.S. Conf. No. 12836. Para III. Third Cesarean section. Scar of previous operation very thick. No adhesions to be found. Mother and child discharged well on the sixteenth day.

CASE IX.—K.S. Conf. No. 8882. Para II. Second Cesarean section. Scar of former operation not found. No adhesions present. Mother and child discharged well on the nineteenth day.

CASE X.—A.P. Conf. No. 1756. Para IV. Second Cesarean section. Uterine scar of former operation found to be slightly thinned. Few adhesions present. Mother and child discharged well on the twelfth day.

CASE XI.—M.R. Conf. No. 8916. Para II. Second Cesarean section. Uterine scar found normal. Very few adhesions present. Mother and child discharged well on sixteenth day.

CASE XII.—M.R. Conf. No. 11659. Para III. Third Cesarean section. Uterine scar found to be normal. Very few adhesions present. Mother died from anesthesia on operating table. Child discharged well on thirty-second day.

CASE XIII.—I.M. Conf. No. 13930. Para II. Second Cesarean section. Uterine scar found to be normal. Very few adhesions present. Mother and child discharged well on the twenty-first day.

CASE XIV.—M.L. Conf. No. 12542. Para II. Second Ce-

sarean section. Uterine scar very thin; excised, uterus sutured and Fallopian tubes excised. No adhesions present. Mother and child discharged well on the thirty-third day.

CASE XV.—A.L. Conf. No. 14708. Para II. Second Cesarean section. No adhesions present. Scar thin in uterus; excised. Mother and child discharged well on eighteenth day.

CASE XVI.—S.K. Conf. No. 15494. Para IV. Second Cesarean section. Justo-minor pelvis. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on the twenty-sixth day.

CASE XVII.—M.H. Conf. No. 7924. Para III. Second Cesarean section. Justo-minor pelvis. Scar of former operation found to be normal. Few omental adhesions present. Mother and child discharged well on the twentieth day.

CASE XVIII.—R.H. Conf. 11956. Para II. Second Cesarean section. Flat Justo-minor rachitic pelvis. Uterine scar not found. No adhesions present. Mother and child discharged well on the twenty-third day.

CASE XIX.—R.H. Conf. No. 16104. Para III. Third Cesarean section. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on fifteenth day.

CASE XX.—N.G. Conf. No. 6649. Para II. Second Cesarean section. Justo-minor pelvis. Uterine scar not found. Very few adhesions present. Mother and child discharged well on the eighteenth day.

CASE XXI.—N.G. Conf. No. 11481. Para III. Third Cesarean section. Justo-minor pelvis. Scar of previous operation normal. Many adhesions present. Mother died on fifth day of pneumonia. Child discharged well on fifth day.

CASE XXII.—F.F. Conf. No. 15247. Para IV. Second Cesarean section. Flat pelvis. Scar of previous operation not found. No adhesions present. Mother and child discharged well on the thirty-eighth day.

CASE XXIII.—A.D. Conf. No. 10128. Para V. Second Cesarean section. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on the eighteenth day.

CASE XXIV.—P.D. Conf. No. 16092. Para V. Second Cesarean section. Flat pelvis. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on the eighteenth day.

CASE XXV.—M.C. Conf. No. 11199. Para III. Second Cesarean section. Generally contracted flat pelvis. Scar of former operation not found. No adhesions present. Mother and child discharged well on the twenty-ninth day.

CASE XXVI.—M.C. Conf. No. 14129. Para IV. Third Cesarean section. Uterine scar not found. Many adhesions present. Mother and child discharged well on the twenty-ninth day.

CASE XXVII.—L.B. Conf. No. 11202. Para II. Second

Cesarean section. Justo-minor pelvis. Uterine scar found to be normal. Omentum adherent to the abdominal scar. Mother and child discharged well on the twentieth day.

CASE XXVIII.—L.B. Conf. No. 14933. Para III. Third Cesarean section. Justo-minor pelvis. Scar of previous operation found to be normal. Many adhesions present. Mother and child discharged on the thirty-fourth day.

CASE XXIX.—B.A. Conf. No. 11607. Para III. Second Cersaeen section. Rupture of uterus through old cicatrix. Many adhesions present. Mother and child discharged well on the twenty-fourth day.

CASE XXX.—R.O. Conf. No. 3206. Para III. Second Cesarean section. Flat irregularly contracted pelvis. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on the twenty-seventh day.

CASE XXXI.—M.M. Conf. No. 3766. Para II. Second Cesarean section. Justo-minor pelvis. Uterine scar found to be normal. Many adhesions present. Mother died from peritonitis on the third day. Child discharged well on the nineteenth day.

CASE XXXII.—P.W. Conf. No. 4830. Para II. Second Cesarean section. Rachitic justo-minor pelvis. Uterine scar found to be normal. Few adhesions present. Mother and child discharged well on the twenty-ninth day.

CASE XXXIII.—R.O. Conf. No. 5747. Para IV. Third Cesarean section. Flat, irregularly contracted pelvis. Scar of former operation normal. Many adhesions present. Mother and child discharged on the eighteenth day.

CASE XXXIV.—S.P. Conf. No. 7398. Para IV. Second Cesarean section. Flat pelvis. Uterine scar found to be normal. Few adhesions present. Mother and child discharged well on the twenty-third day.

CASE XXXV.—B.G. Conf. No. 7664. Para II. Second Cesarean section. Flat justo-minor pelvis. Scar of previous operation not found. No adhesions present. Mother and child discharged well on the twenty-fourth day.

CASE XXXVI.—M.C. Conf. No. 9428. Para II. Second Cesarean section. Justo-minor pelvis. Uterine scar normal. No note made of adhesions. Mother and child discharged well on the twenty-third day.

CASE XXXVII.—R.O. Conf. 5747. Para V. Fourth Cesarean section. Flat, irregularly contracted pelvis. Uterine scar not mentioned. No note made of adhesions. Mother and child discharged well on the twentieth day.

CASE XXXVIII.—R.O. Conf. No. 11906. Para VI. Fifth Cesarean section. Flat, irregularly contracted pelvis. Uterine scar very thin—excised. Many adhesions present. Mother and child discharged well on the sixteenth day.

CASE XXXIX.—Y.S. Conf. No. 18638. Para III. Second Cesarean section. Justo-minor pelvis. Uterine scar normal.

No adhesions present. Mother and child discharged well on the eighteenth day.

As will be seen, thirty cases were done for the second time, seven for the third time, and one each for the fourth and fifth times. In eighteen cases there were no adhesions present at all, in eleven very few, in seven there were many, in one the uterus was adherent to the abdominal wall and in two cases no note was made. The uterine scar of former operations was not seen in nine cases, was normal (by this we mean not thinner than the rest of the uterus), in twenty-five cases, was very thin in four cases, and was ruptured in one case, the latter being one where many adhesions were noted.

In the series there were three deaths of mothers; one from anesthesia, occurring on the table before the uterus was opened, the second from sepsis on the third day and the third from pneumonia on the fifth day. One child died of hemophilia on the sixth day.

Thus we observe from the foregoing analysis that the repeated operation offers very little danger over the primary and that in cases where some obstruction to labor exists such for example as, contracted pelvis, that there is no logical reason why the patient should not become the mother of a normal family with periods of quiescence and comfort between pregnancies, making the operation of sterilization unnecessary and, in the writer's opinion, as a routine measure distinctly unjustifiable. Cesarean section, while not difficult in the hands of an experienced operator, requires strict attention to certain points of technic, which, as observed, should terminate in a successful result for both mother and child.

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20 WEST FIFTIETH STREET.

CESAREAN SECTION. TWENTY-SEVEN CASES WITHOUT MATERNAL MORTALITY.*

BY

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IN May, 1909, I reported to the Philadelphia Obstetrical Society, six Cesarean sections, making my total number at that time, twenty cases. Since then I have operated upon seven cases (five at the Medico Chirurgical Hospital, one at the Philadelphia Lying-in Charity and one at the Philadelphia General Hospital). This total of twenty-seven cases (representing my entire experience with delivery by abdominal section to date) is without maternal mortality and but one fetal death. It is my desire to-night to report the cases recently operated upon and briefly review my past work.

CASE I.—*Coxalgic Pelvis. Repeated Cesarean Section.*—Mrs. F., was admitted to the Medico Chirurgical Hospital September 10, 1909. She is an American thirty-six years old and pregnant for the third time. She had the usual diseases of childhood and at five years of age, she developed hip-joint disease, which resulted in ankylosis. She went about on crutches until her twelfth year. In June, 1886, she was delivered of her first child, by craniotomy, after a long labor. After this operation, her menstrual periods did not return. She was treated for supposed ovarian disease until June, 1897, at which time a second pregnancy revealed itself in quickening and she was referred (by R. M. Quig of Honey Grove, Pa.) to the Medico Chirurgical Hospital for treatment. Examination of the patient on admission to the hospital, proved her to be pregnant near term. She was five feet in height and in standing posture, the right leg was partly flexed and ankylosed, the heel being three inches from the floor. The abdomen was large and pendulous, the fetal ovoid, presenting by its cephalic pole was movable in the false pelvis and resting in the right iliac cavity. The pelvis was obliquely contracted with the right crest of the illium much higher than the left. The

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following measurements were made: Interspinus measurement, 23 cm.; intercrystal, 23 cm.; right oblique, 20 cm.; left oblique, 22 cm.; internal conjugate, 18 cm.; true conjugate, 8.5 cm. Internal measurement revealed the fact that the pelvis was greatly deformed and that the head would not engage. With the history of the difficult craniotomy, we decided upon Cesarean section. The operation was performed October 16th, 1897, P.M., the patient having been in labor ten hours without advance of the presenting part. The baby delivered was slightly asphyxiated occasioned by the futile efforts of the uterus to expel its contents. The second elective Cesarean section was performed upon this patient, September 27, 1909. The uterus was found adherent to the anterior abdominal wall. The adhesions were not extensive and the organ was liberated. The uterine incision was made in the medium line high up and to the right of the old scar, the membranes were ruptured and the child extracted by the breech. It was in a healthy condition and weighed 6 pounds 7 ounces. The patient made a good recovery and left the hospital three weeks after the operation.

CASE II.—*Rachitic Pelvis*.—Mrs. B., a negress aged nineteen years and a rachitic dwarf, was admitted to the Philadelphia Lying-in-Charity, January 28, 1910. She was a primipara and was well advanced in the last month of gestation. Menses began at the age of sixteen years, had always been scanty but regular and painless. She had her last period June 12, 1909. Her mother died of phthisis, otherwise the family history is negative. Her pelvis measured as follows: Interspinous, 22.5 cm.; intercrystal, 22.5 cm.; internal conjugate, 17 cm.; diagonal conjugate, 8 cm.; estimated internal conjugate, 6.5 cm. The patient is a typical rachitic dwarf. The vertex is presenting but floating and movable above the brim of the pelvis. February 9, 1910, the elective Cesarean section was performed for an absolute indication. A longitudinal incision was made in the uterus, reaching to the fundus, the membranes were ruptured and a female child weighing 5 pounds 2 ounces was removed. The placenta was found to be attached to the posterior and fundal end of the uterus. After its removal, the cervical canal was dilated digitally from within to the size of a fingers' width. The uterine wound was closed with fine silk sutures, deep and superficial. During the closure of the abdominal incision, the patient's stomach became distended with gas. This complication was relieved by the passage of the stomach tube and gentle gastric lavage with warm water. With this exception, the postoperative history was uneventful. The patient and baby made a speedy recovery and were discharged from the Maternity, March 6, 1910, one month after the operation.

CASE III.—*Generally Contracted Pelvis*.—Mrs. W. aged twenty-seven years, born in Russia, was admitted to the Medico Chirurgical Maternity, April 4, 1910. The patient was a multipara, her menstrual history was without interest. One year previous to

her admittance, (January 9, 1909) she had had a difficult labor, which resulted in the birth of a dead child, by craniotomy. She had her last menstrual period July 14, 1909, and on examination, was found to be near term. The head was presenting and was freely movable above the pelvic inlet. The morning following her admission (April 5), the patient went into labor. After a test of six hours without advance of the presenting part, celiohysterotomy was performed. A longitudinal incision was made in the uterus and the infant weighing 7 pounds was extracted. After firm contraction of the uterus was established, the incision was closed with fine silk; first a deep suture, just escaping the mucosa and second, a superficial suture bringing the peritoneum nicely together. The patient and infant made an uninterrupted recovery. The stitches were removed on the twelfth day and the patient was discharged April 22, about three weeks after the operation. November 26, 1910, (seven months after the operation) the patient returned to the hospital, and is found to be in good health.

CASE IV.—*Rachitic Dwarfed Pelvis*.—Mrs. J., a prima gravida, aged twenty years, born in the United States, was admitted to the Philadelphia General Hospital, January 13, 1910. She had had the usual diseases of childhood, and when six years of age, had typhoid fever. Her menstrual history began at the sixteenth year; it was regular in type and three days in duration. She had her last period, August 3, and her labor was expected May 10. The pelvic measurements were as follows: Interspinus, 21 cm.; intercrystal, 24 cm.; external conjugate, 18 cm.; true conjugate, 7.5 cm. As the patient approached term, the disproportion between the fetal presenting part and the pelvic canal became more pronounced, the head being moveable above the pelvic brim. An elective celiohysterotomy was performed May 6, 1910, for what seemed to be an absolute indication. A healthy male child was born. The child was under the influence of the anesthetic at birth, but after ten or fifteen minutes, came out of the anesthesia and cried lustily. Its weight was 7 pounds 14 ounces. Mother and infant made a speedy recovery and were discharged June 6, 1910.

CASE V.—*Funnel Shaped Pelvis*.—Mrs. K. L. (referred by Dr. Dotterer) was admitted to the Medico Chirurgical Hospital, May 9, 1910. She was thirty-six years old and pregnant for the second time. Her family history is good; mother and father are living and healthy. Her personal history: As a child she was breast fed and grew rapidly. Had typhoid fever at her sixteenth year. Puberty began at the fourteenth year, the periods were regular and normal in character. In 1905 she had her first labor. This was very much prolonged and after futile efforts with the forceps, it was necessary to perform craniotomy. She became pregnant a second time, August 12, 1909, and upon admission to the hospital, was well advanced in the last month of gestation. Examination of the pelvis shows a marked contrac-

tion of the internal measurements, particularly at the outlet. As the patient was anxious for a living child, and with the history of the craniotomy in her last labor, section was decided upon. Elective celiohysterotomy was performed, May 11, 1910. A median longitudinal incision was made and a baby weighing 8 pounds 9 ounces was removed, in a vigorous and healthy condition. The patient made an uninterrupted recovery and left the hospital June 1, about three weeks after her admission.

CASE VI.—*Justo Minor Pelvis*.—Mrs. D. (referred by Dr. Hoell) pregnant for the second time, aged thirty-six years, born in the United States, was admitted to the Medico Chirurgical Hospital Maternity Department, May 5, 1910, in the last month of gestation. Her first confinement was in 1901. The labor was much prolonged, forceps were used and she was finally delivered of a dead child. Pelvic measurements were as follows: Interspinus, 26 cm.; intercrystal, 27 cm.; external conjugate, 18 cm.; true conjugate, 8.5 cm. The pelvis resembled the funnel shaped pelvis. The head was riding high above the brim and seemed very large and hard. With the history of the first labor, and as the patient was very anxious to have a living child, it was decided to do elective Cesarean section. Celiohysterotomy was performed May 19, 1910. The abdominal incision was made 15 cm. in length, having the umbilicus as a center point, and the uterus opened by a longitudinal incision. This incision exposed the placental site. The organ was separated on one side by the hand, the membranes ruptured and a male child weighing 9 pounds, 10 ounces extracted by breech. The child anesthetized seemed slightly asphyxiated but soon began to breathe. The uterus after the placenta was removed was eventrated and the wound closed with fine silk. Mother and infant made a good recovery and were discharged, June 9, 1910 (three weeks after the operation).

CASE VII.—*Toxemia of Pregnancy*.—Twins. Mrs. C. D., a prima gravida, aged twenty-four years, born in the United States, (Housewife by occupation) was admitted to the Medico Chirurgical Hospital, June 12, 1910. She had the usual diseases of childhood. First menstruation had occurred in the fourteenth year and had always been normal in character. Her last menstrual period was April 20, 1910, and the expected confinement was fixed for June 27. The patient advanced in the early months of gestation without complications and it was not until a few weeks prior to her admission to the hospital, that she showed evidences of toxemia, demonstrating itself in albuminuria, dropsy of the extremities and nausea. Examination on admission shows the patient to be in the last month of gestation. The abdomen is enormously distended and irregular in outline; two fetal heart sounds are heard. Both fetuses seem to present by their cephalic extremity. The pelvic measurements were normal. Dyspnea and nausea were very pronounced. The urine analysis showed a large quantity of albumen and numerous short, broad,

granular casts. The patient was immediately placed upon an eliminative treatment and a milk diet. This treatment was followed by temporary relief of the symptoms present, with the exception of the dyspnea. The improvement, however, was only of short duration, when eclampsia threatened. The arrest of gestation was now deemed wise and the induction of premature labor was entertained but because of the apparent necessity for rapid termination of pregnancy, section was decided upon. Celiohysterotomy was performed, June 22, ten days after the patient was admitted to the Hospital. A median longitudinal uterine incision was made and the children rapidly removed. The extraction was easily accomplished as both pelvic extremities were within easy reach of the operator's hand. Considerable shock followed the operation, and the stomach became greatly distended with gas. Gastric lavage relieved this symptom and then the patient continued to rapidly improve. The babies were in vigorous health, each weighing 6 1/2 pounds. The toxic symptoms now rapidly disappeared, each urinalysis showing a more decided improvement in the patient's condition. The mother and babies left the hospital, July 13, three weeks after the operation, in very good condition.

As previously stated, the report of these seven cases, make my total experience with Cesarean section twenty-seven cases. In reviewing the cases collectively we find that hysterectomy was only once performed. It was the first case operated upon. The labor was obstructed by a large fibroid of the uterus; she was septic and the child had already been dead some time. The other twenty-six cases were in fair condition and hysterotomy was resorted to. With the exception of this first case in which the child was dead for some time before the operation, the list is without maternal or fetal mortality. In twenty-five cases, the indication for operation was pelvic deformity. In the two remaining cases, one was operated on for labor obstructed by ventral fixation of the uterus, the other for threatened eclampsia. There were seven primiparæ and twenty multiparæ. Indications for section in the primiparous cases were as follows:

Case 1.—Fibroid of the uterus and rachitic pelvis, forty-eight hours in labor.

Case 10.—True conjugate of 7.5 cm. fifteen hours in labor.

Case 12.—True conjugate, 6 cm. Absolute indication.

Case 19.—True conjugate, 5 cm. The patient was a dwarf 3 feet 10 inches in height.

Case 22.—True conjugate, 6.5 cm. Absolute indication.

Case 24.—True conjugate, 7.5 cm. Rachitic dwarf.

Case 27.—Threatened eclampsia.

CESAREAN SECTION, WITH DATES AND DETAILS OF CASES.

Case No.	Place of operation	Date of admission	Date of operation	Diagnosis	Indication	Result		Date of discharge	Remarks	Para
						Mother	Child			
1	Philadelphia Lying-in Charity	May 21, 1896	May 21, 1896	Vertex L.O.A.	Flat, rachitic pelvis with uterine myomata. In labor 48 hours.	Lived	Died	June 18, 1896	Labor obstructed. Emergency care. Septic. True conjugate, 6.5 cm.	I
2	Philadelphia Lying-in Charity	Aug. 10, 1897	Aug. 12, 1897	Vertex L.O.A.	Scolio-rachitic pelvis; second Cesarean section.	Lived	Lived	Sept. 10, 1897	Elective operation. True conjugate, 6.75 cm.	II
3	Medico-Chirurgical Hospital	Oct. 5, 1897	Oct. 16, 1897	Vertex L.O.A.	Coxalgic pelvis. First child craniotomy.	Lived	Lived	Nov. 16, 1897	In labor 10 hours.....	III
4	Medico-Chirurgical Hospital	Oct. 3, 1898	Oct. 6, 1898	Vertex L.O.A.	Generally contracted pelvis. First and second child craniotomy, third forceps; fourth, fifth and sixth, premature labor. All dead.	Lived	Lived	Nov. 4, 1898	Elective Cesarean section.	VII
5	Medico-Chirurgical Hospital	Feb. 13, 1900	Feb. 13, 1900	Vertex L.O.A.	Scolio-rachitic pelvis; third Cesarean section. Same as case 2.	Lived	Lived	March 10, 1900	In labor 13 hours; infant weight, 7 1/2 pounds.	III
6	Philadelphia Lying-in Charity	Feb. 28, 1900	Feb. 29, 1900	Vertex R.O.P.	Obliquely contracted pelvis. First child, forceps. Dead. Second child, craniotomy.	Lived	Lived	March 28, 1900	In labor 14 hours. Infant weight, 9 1/4 pounds.	III
7	Philadelphia Lying-in Charity	Aug. 28, 1900	Sept. 29, 1900	Vertex R.O.P.	Flat rachitic pelvis; first child forceps, dead. Second and third children, craniotomy.	Lived	Lived	Oct. 22, 1900	Elective Cesarean. Infant weight, 8 7/8 pounds. Resection of Fallopian tubes.	IV
8	Philadelphia Lying-in Charity	Feb. 9, 1901	Feb. 9, 1901	Vertex R.O.A.	Generally contracted pelvis. Three dead children.	Lived	Lived	March 2, 1901	In labor 11 hours, tentative forceps operation. Cut down placenta.	IV
9	Philadelphia Lying-in Charity	Feb. 2, 1903	Feb. 2, 1903	Vertex R.O.P.	Generally contracted pelvis. Second Cesarean section. Same as case 8.	Lived	Lived	March 1, 1903	In labor Fallopian tubes treated—uteroabdominal adhesions.	V

CESAREAN SECTION, WITH DATES AND DETAILS OF CASES. (Continued.)

Case No.	Place of operation	Date of admission	Date of operation	Diagnosis	Indication	Result		Remarks	Para
						Mother	Child		
10	Philadelphia Lying-in Charity	April 15, 1903	May 25, 1903	Vertex L.O.A.	Rachitic pelvis.	Lived	Lived	In labor 15 hours.	I
11	Philadelphia Lying-in Charity	July 8, 1903	July 28, 1903	Vertex R.O.P.	Rachitic pelvis; first labor; craniotomy.	Lived	Lived	Elective Cesarean. Placental tubes ressected	III
12	Medico-Chirurgical Hospital	Oct. 3, 1903	Nov. 15, 1903	Vertex L.O.A.	Flat rachitic pelvis; true conjugate, 6 cm.	Lived	Lived	Elective Cesarean.	I
13	Medico-Chirurgical Hospital	Sept. 23, 1905	Oct. 9, 1905	Vertex R.O.A.	Generally contracted pelvis. Exostosis at promontory of sacrum. True conjugate, 7-5 cm.	Lived	Lived	In labor 12 hours. First labor difficult. Forceps. Dead child. Weight of infant, 7 2/3 pounds.	II
14	At home of patient	Feb. 15, 1906	Feb. 15, 1906	Vertex R.O.P.	Labor obstructed by anterior fixation of the uterus.	Lived	Lived	In labor 12 hours. A large mass (the anterior uterine wall) obstructed the pelvic inlet.	III
15	Medico-Chirurgical Hospital	Oct. 19, 1906	Nov. 12, 1906	Vertex L.O.A.	Generally contracted pelvis. Second Cesarean section. Same as case 13.	Lived	Lived	In labor 8 hours. No adhesions.	III
16	Philadelphia Lying-in Charity	Mar. 9, 1907	Mar. 9, 1907	Vertex R.O.A.	Funnel shaped pelvis; two children born dead. For cephs.	Lived	Lived	In labor 12 hours. Weight of child 8 1/2 pounds.	III
17	Philadelphia Lying-in Charity	July 22, 1907	July 23, 1907	Vertex R.O.P.	Generally contracted pelvis. Second Cesarean section.	Lived	Lived	Elective Cesarean section. Very extreme omental and uteroabdominal adhesions.	II
18	Medico-Chirurgical Hospital	Apr. 10, 1908	Apr. 15, 1908	Vertex L.O.A.	Generally contracted pelvis. Four difficult labors.	Lived	Lived	Elective Cesarean. Incision upon placental site.	V

CESAREAN SECTION, WITH DATES AND DETAILS OF CASES. (Continued.)

Case No.	Place of operation	Date of admission	Date of operation	Diagnosis	Indication	Result		Remarks	Para
						Mother	Child		
19	Medico-Chirurgical Hospital	Jan. 1, 1909	Jan. 2, 1909	Vertex L.O.K.	Dwarfed pelvis; conjugata vera, 5 cm.	Lived	Lived	Patient's height, 3 feet 10 inches. Elective Cesarean.	I
20	Philadelphia Lying-in Charity	Jan. 5, 1909	Jan. 5, 1909	Vertex R.O.P.	Generally contracted pelvis. First child, craniotomy.	Lived	Lived	In labor 22 hours.	II
21	Medico-Chirurgical Hospital	Sept. 10, 1909	Sept. 27, 1909	Vertex R.O.P.	Coxalgic pelvis same as case 2. Second Cesarean section.	Lived	Lived	Second elective Cesarean section. Uteroadominal adhesions.	III
22	Philadelphia Lying-in Charity	Jan. 28, 1910	Feb. 9, 1910	Vertex R.O.A.	Rachitic pelvis. True conjugate, 6.5 cm.	Lived	Lived	Elective Cesarean section.	I
23	Medico-Chirurgical Hospital	Apr. 4, 1910	Apr. 5, 1910	Vertex. R.O.P.	Generally contracted pelvis. First child, craniotomy.	Lived	Lived	In labor 6 hours.	II
24	Philadelphia General Hospital	Jan. 13, 1910	May 6, 1910	Vertex L.O.A.	Rachitic dwarfed pelvis. True conjugate 7.5 cm.	Lived	Lived	Elective Cesarean section.	I
25	Medico-Chirurgical Hospital	May 9, 1910	May 11, 1910	Vertex L.O.A.	Funnel-shaped pelvis; first child, craniotomy.	Lived	Lived	Elective Cesarean section. Infant weight, 8 2/3 pounds.	II
26	Medico-Chirurgical Hospital	May 5, 1910	May 19, 1910	Vertex L.O.A.	Justo-minor pelvis; first labor prolonged, difficult—forceps. Child dead.	Lived	Lived	Elective Cesarean section.	II
27	Medico-Chirurgical Hospital	June 12, 1910	June 22, 1910	Vertex L.O.A. 2 Vertex L.O.A.	Toxemia of pregnancy; threatened eclampsia. Twins.	Lived	Lived	Elective Cesarean section.	I

In fourteen cases the section was performed before labor. In thirteen cases, there was the test of labor, six hours in the shortest case to forty-eight in the case demanding hysterectomy.

REPEATED CESAREAN SECTION.

There were six cases of repeated cesarean section. In five of the cases, the operation was done twice:

CASE I.—Operated upon August 12, 1897. The abdominal incision was made to the side of the old scar, and the omental adhesions were loosened when it was found that the uterus and the abdominal wall were firmly united at the lower angle of the old incision. The uterus showed no evidence of the first incision. A longitudinal incision was made in the uterus, a trifle higher than the first incision.

CASE II.—Operated upon February 2, 1903. Omental adhesions were found and the uterus was attached to the abdominal wall. The uterus was freed in this case, and a portion of the omentum removed. A longitudinal incision in the uterus was made.

CASE III.—Operated upon November 12, 1906. The incision was made at the site of the old cicatrix. In this case there were no adhesions. Upon the anterior surface of the uterus could be seen a series of small depressions, the location of the sutures in the first operation.

CASE IV.—Operated upon July 23, 1907. Very extensive uteroabdominal and omental adhesions were found, necessitating a longitudinal fundal incision.

CASE V.—Operated upon September 27, 1909. Adhesions of uterus to abdominal wall were found. Incision made in the median line, to the right of the old cicatrix.

In one case the operation was done three times:

CASE VI.—February 13, 1900, a third celiohysterotomy, and a second repeated operation, was performed in the same woman before mentioned. The incision was made over the old scar. Extensive omental and uterine adhesions were now found. It was deemed unwise to liberate these adhesions, and Fritsch's transverse fundal incision was made through the uterine wall.

Enough repeated Cesarean sections have been performed now to make it possible to speak advisedly as to the wisdom of this operation. If the maternal mortality in this operation to-day were 30 or 40 per cent. then it would not be right to repeat the section, but when it has been reduced to as low as 5 or 6 per cent., the question is altered. Especially is this the case when we know that the per cent., of mortality in repeated Cesarean section is often lower than in the first operation. I will take the liberty to draw from a previous paper on this subject:

"The danger that adhesions, which are so liable to form, may

cause intestinal trouble is but remote. Some operators recommend a method of suturing uterine wounds to favor the formation of adhesions. This course is advocated by Sinclair and Wallace. When extensive adhesions take place there is less likelihood of rupture of the scar; and in the repeated operation it is possible to perform a subsequent operation without opening the peritoneal cavity. As time goes on, it is my opinion that, with a more nearly perfect technic, uteroabdominal adhesions will be found less frequent and less extensive. My own cases I feel, bear out this statement, for in one case operated upon no adhesions were found.

The careful immediate preparation of the patient for section will be of importance. In addition to the usual preparation of the abdomen, it will be wise to follow the course pursued by Monroe Kerr, of washing the vagina very carefully with lysol solution (1 per cent.). The size and position of the abdominal incision are next in importance. In the majority of my cases the incision was made below the umbilicus, and was only sufficiently large to enable me to carry out the further steps of the operation. Incision above the umbilicus is recommended by some as less likely to be followed by hernia. These operators also recommend the longitudinal or transverse fundal incision in the uterus. The advantage claimed for this method of operation is that when it is completed, the uterine wound and the abdominal wound are not in contact, for the emptied uterus takes a position below the umbilicus. If the peritoneum is closed over the uterine wound, there are no raw surfaces to come into contact and adhesions do not take place. Involution comes on almost as rapidly as in the cases of a normal delivery, and eventually the uterus assumes a normal position in the pelvis without adhesions. The uterine incision, whether it be low or at the fundus, and whether longitudinal or transverse, should be a clean incision, only large enough to allow of extraction. Great care should be exercised in closing this wound. I have been afraid to depend upon an absorbable suture, and have always used fine silk. The advantages of silk are its ease of sterilization and its strength. After placing the deeper sutures, involving the musculature of the uterus, one should make a nice coaptation of the peritoneum with superficial sutures.

MATERNAL AND FETAL MORTALITY.

The classical Cesarean section is growing more and more in popularity. We feel that owing to the simplicity of this surgical

procedure, it may be too frequently performed. The maternal mortality has been gradually reduced, but in addition to this, we must consider carefully the fetal mortality. It is sometimes a mistake to end labor rapidly by section, when the child's life is jeopardized and when the child is dead, the operation is too frequently done to the exclusion of the operations, craniotomy or embriotomy. To bring about the best results, painstaking care must be used in the selection of the cases. This is a difficult matter because of the fact that many are border-line cases and nothing short of a test of labor will enable us to determine upon the right course of procedure. In twenty-one of the twenty-seven cases reported, a history of a previous labor or a test of labor was carefully studied. A tentative forceps operation may in certain cases be resorted to and the escape of meconium or the prolapse of the cord, do not necessarily contraindicate the operation. The results here reported were obtained chiefly by first, carefully selecting the cases; second, study of the fetal heart sounds prior to operating and third, painstaking care in the closure of the uterine incision.

1909 SPRUCE STREET.

CONTUSIONS OF THE ABDOMEN, RESULTING IN INJURY TO THE CONTAINED VISCERA: WITH REPORT OF CASES.*

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IN many acute and chronic abdominal conditions, experience individually and collectively, has resulted in the development of a diagnostic and operative technic which has enabled us to combat most successfully with conditions which a few years ago meant death or chronic invalidism. I have only to mention, in this regard, the work done by surgeons in diseases of the stomach, gall-bladder, appendix, uterus and other organs with the great saving of human life and suffering. In studying injuries of the contained viscera, sustained in contusions of the abdomen, it is very apparent that we are dealing with a class of surgical conditions, somewhat uncommon, as compared with many others. The comparative rarity of such injuries it seems is sufficient

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warrant for their report, for by recording our own experiences we may be able to develop points which may be of use to others in time of need. While my own experience is limited, I trust that I may be able to offer you something of value and it is sincerely hoped that you will afford the paper a free discussion.

Blows, kicks, crushing accidents, and those of kindred nature, often give the attendant marked evidence that serious injury has been inflicted, yet on the other hand, seemingly trivial accidents may result in the most severe lesions to one or more of the abdominal viscera. Every blow applied directly or indirectly to the abdominal contents should be regarded as serious, and on no account be assumed as without import, until such has been proved the same beyond a doubt. This may tax the skill of the examiner to the utmost and may require the most careful observation of the patient for several days. The recognition of many of the rarer forms of injury is beset with difficulty, hence the need in every case of the most thorough examination and careful interpretation of the symptoms, objective and subjective. The common practice among many physicians in cases of abdominal injury, of giving morphine enough to control the pain, is mentioned to be severely condemned. No one disputes the need of enough anodyne to control the pain, with a patient suffering agony, but it is more or less evidence of admitting one's lack of judgement, to say the least, to fill a patient with morphine. It does no good; on the other hand it often does incalculable harm, as it robs the patient of his chances by inspiring false hope, not only in the patient himself, but in friends relatives and physicians as well. Severe contusions of the abdominal wall, may do no more than bruise the patient and disable him for a few days. Often times there results a paralysis of the intestinal tract as is shown by failure of the bowels to move. In these cases a common practice is to be condemned, *i.e.*, the giving of cathartics by the mouth. Their use does not appeal to us as being surgical for we do not know the condition of that intestinal tract. The patient may have sustained an injury to the intestinal tract of a nature that the cathartic will speedily convert into a most grave condition. If gas distention is making things uncomfortable a carefully given enema will give relief. While many of the injuries, to be mentioned require the immediate opening of the abdomen, it must be remembered that a reckless performance of abdominal section is not a surgical procedure. Care and discrimination must be used in every case.

Among 365 cases of subcutaneous injuries of the solid abdominal viscera, quoted from Johnson, the liver was injured 189 times and the combined injuries of the spleen, kidney and pancreas numbered 176. The greater liability of the liver to serious injury is dependant upon several facts: its enormous size, compared with the other solid organs, its want of elasticity, its anatomical structure and position. The right lobe is the more often injured, lying as it does between the ribs and spinal column. According to Kehr, quoted from Moynihan, the subcutaneous wounds of the liver occur in three varieties. 1. Rupture of the hepatic tissue with tears in the capsule. 2. Capsular separation with the subsequent formation of subcapsular hematmata. 3. Central rupture of the parenchyma, which results in the formation of separate or united hematmata. The blood may be subsequently absorbed or we may have the formation of cysts or abscesses. The rupture may be clear cut, as if made with a knife, or the liver actually pulpified. The two factors of importance in hepatic injuries are hemorrhage and sepsis. According to Edler the hemorrhage if to prove fatal will do so within twenty-four hours. While the liver may be the only organ injured, such is by no means usually the case, and we may have in association serious injuries of any of the other abdominal viscera.

Hepatic injuries must be regarded as serious and the need for operative interference is often imperative. The prognosis is grave and Edler gives a mortality in the subcutaneous type as 78.1 per cent. Tilton's statistics covering the liver injuries treated in hospitals of New York for ten years show a mortality of 62.5 per cent. in the ruptured cases.

Isolated injuries of the pancreas are very rare. When this organ is injured it is usually in association with grave injury to some other organ. The associated injuries are usually of such a nature that they govern the symptoms and unless one's attention is directed to the pancreas and an actual inspection made of the gland serious damage may go undetected.

Von Mikulicz, in 1903, collected the records of forty-five cases of pancreatic injury. Twenty-four of this number were of the subcutaneous variety and in thirteen of the cases no operation was performed, with death in every instance. Eleven were operated upon and seven recovered. Since operation consisted in simple exposure of the gland and drainage it shows a favorable prognosis may be expected with this simple procedure. In our case the injury of the pancreas was limited to that organ and as

the exciting factor was of common occurrence it makes the case even more interesting.

Injuries of the spleen most commonly are of the subcutaneous type. In 467 cases of splenic injury, collected by Berger 308 were of this form, 75 per cent. of the cases, untreated, died of shock and hemorrhage within twenty-four hours. The operative mortality in all cases shows 25 per cent. It is extremely difficult, in the majority of cases, to limit one's diagnosis to injury of the spleen but the symptoms of internal hemorrhage are so apparent there is no doubt but that the abdomen must be opened. Subcutaneous ruptures are very liable to occur after run over accidents, crushings and falls from a height. In twelve cases seen by Johnson only three occurred following direct violence from blows. Bearing in mind the vascularity of the spleen it is easy to understand that operative interference must be prompt else the patient may bleed to death within a very short time.

The individual worker in private practice meets with few injuries of the kidney requiring operative measures for their relief. Contusions and ruptures, by external violence, are perhaps the most common form but renal injuries are usually in association with those of other organs. Keen states that among 155 cases of kidney injury 118 were of the subcutaneous type. The lesions vary greatly: ranging from contusions affecting only the perinephritic tissues, which may result in more or less localized pain and a slight amount of blood in the urine, to a complete smashing of the renal parenchyma. Direct violence directed to the abdomen, over the region of the kidney, is responsible for most of the cases but hydraulic pressure, being exerted during falls from a height or severe and sudden twists of the trunk, can and does cause severe lacerations. Hematomata in the region of the kidney may follow several courses. They may be absorbed, giving no further trouble, they may become infected resulting in the formation of a localized abscess which will give the characteristic symptoms of the absorption of pus, or the abscess may rupture into the peritoneal cavity, externally either in the loin or groin, into a hollow viscus or even into the ureter. Of the latter we have seen one case and operation resulted in complete recovery. Injuries in which the renal vessels or the ureter are torn are most grave in outlook and in case of severe vessel injury death will result in a few minutes.

Injuries of the gastro-intestinal tract may occur singly or in complication with other organs. Intestinal injuries are one of

the most serious of the conditions under discussion, and the prognosis rapidly assumes a grave import in proportion to the time that elapses between the time the injury is inflicted and repair is made. The pouring into the peritoneal cavity of the intestinal contents means death, from septic peritonitis, and he who waits for the symptoms of this condition to appear, before doing laparotomy, has waited until his patient is practically beyond hope. If we turn to some of the text books for symptoms relating to intestinal injury we are given the symptoms of peritonitis—a terminal state. The symptoms of this condition are late and the time to open the abdomen is before the advent of this frightful complication. Decision, for or against operation, must be made by the symptoms presenting in each and every case which is a law unto itself. Injuries which result from a kick, a small rapidly moving object striking the abdominal wall with great force, but limited in area, commonly cause an intestinal rupture. The rupture may be complete, in which instance, the contents of the intestines are rapidly poured into the peritoneal cavity, or we may have a tearing of the peritoneal and muscular coats leaving the mucous coat intact. The latter form is one of the most treacherous that the surgeon may be called upon to treat. After the subsidence of the shock the patient may seemingly be slightly injured and food or cathartics given with disastrous results. The hard and fast rule should be made in actual or suspected injuries of the intestinal tract to give nothing, and by this we mean absolutely nothing should be given that patient by mouth until we are certain all is well. If the patient vomits, or we know the stomach contains food, wash out that viscus, give the very smallest dose of morphine that is necessary, carefully take note of every symptom. Diffusely applied force, such as might obtain in run over accidents, severe crushings, as between buffers of cars, etc., is more liable to result in a tearing of the intestine at the duodeno-jejunal flexure, the ileo-cecal junction or a greater or less separation of the intestine from the mensentry. The latter type of injury is difficult of diagnosis, but unless we make a diagnosis and open the abdomen, death will result from the gangrene of the intestine and resulting peritonitis.

The ileum is more frequently injured than any other part of the intestinal tract. It occurred in this location in forty-three of the seventy-nine cases of intestinal injury collected by Gage. After the ileum the jejunum presents the next in order the site

of the injury, followed by the duodenum and large intestine, in order given.

The importance of early diagnosis of injury to any of the abdominal viscera, can not be too strongly emphasized, but this fact obtains even more strongly in case of intestinal injury. Every hour that lapses between the time of the injury until repair is made seriously impairs the chances of the patient. As has been shown, laceration or injury of the lower part of the small intestine is much more common than that of the upper, and with this important fact to aid us we must also bear in mind the increase in the toxicity of the intestinal contents the lower down the injury. In making the diagnosis we are guided by the nature of the accident, the size of the object causing the trauma and whether its force was limited or applied diffusely, and the signs upon the abdomen, such as ecchymoses, etc.

Blows directed toward, rather than away from the spinal column, are more liable to cause the more serious intestinal injuries and this obtains more especially in the region below the umbilicus, justly termed by Moynihan the "dangerous area". In nine cases of intestinal rupture, collected by Makins, eight were below this point. Symptoms of abdominal contusions may be divided, for the sake of convenience, as follows: Shock, which may be absent in the most severe cases and which alone may cause death in others; signs of internal hemorrhage, which we may or may not be able to locate as to source; symptoms referable to rupture of either the liver, spleen, kidney or any portion of the gastrointestinal tract. If the patient does not react from the shock after the lapse of sufficient time and the institution of proper treatment one must endeavor to find the reason for the same. While it may be difficult, in every given case, to determine the exact condition of affairs that may be present there will usually be sufficient evidence, to the careful observer, to enable him to pursue the proper course. It is impossible to enumerate a certain set of symptoms, and say operate in the face of these, and do not in their absence. Every given case must be carefully studied and the presenting symptoms carefully interpreted.

One may sum up as follows: If in any given case of abdominal contusion, which may or may not have been regarded as serious at the time of infliction; there is a persistency of the shock, if the pulse indicates a progressing hemorrhage, if vomiting is persistent, if there continues localized or general muscular rigidity, of that board-like character which will not yield to pressure, if

there is appreciable rapid increase of the abdominal distention, laparotomy is not only justified it is imperative to save the patient. In making a diagnosis of intestinal rupture one may bear in mind the picture portrayed by Le Conte as follows: "The abdominal facies consists of a peculiar drawing of the lines and deepening of the furrows of the face, which give an anxious careworn expression to the countenance, while the eyes are questioning and anxious and search the faces of the people about."

It is not my intention, nor is it within the scope of an article of this nature, to go into the details regarding the different procedures in operative lines. It is to be remembered that the patient has sustained a severe injury and will not withstand tinkering and fussing. That by no means indicates that the operator sacrifice the patient by the neglect of discovering some important injury or by careless technic, but it does mean that we must get in quickly and get out as quickly as is possible. In regard to opium or morphin; as we have mentioned before, its indiscriminate use is to be condemned. It must be given in the presence of excruciating pain but only in sufficient amount to allay, not to benumb. The irrational and foolish use, by some, of the so-called heart stimulants in face of shock is of no value. In case of free hemorrhage they increase the condition we would check and they do not combat shock, which we can much better overcome with small, carefully given enemata of saline solution and coffee, the application of dry heat and the judicious use of camphor in oil. In no case is a cathartic to be given by mouth until we know the patient has not sustained an injury to the gastro-intestinal tract.

CASE I.—Patient was twelve years of age and in perfect health, according to the statement of his parents, at the time of the accident. While engaged in pushing some hay along the floor of a barn he ran the fork against a board projecting above the level of the floor. The handle of the fork was resting against his abdomen, pit of the stomach as related by his father, and he received the impact of the blow on the abdomen. He was knocked down by the blow and complained of a general abdominal pain for a few minutes but then got up and no more attention was paid to the injury. That night he partook very heartily of food and went to bed as usual, feeling a little soreness, but nothing to cause alarm. During the night he was seized with most intense abdominal pain. He vomited and complained bitterly of the pain. The pain was assumed to be "indigestion" and the child was given a large dose of some cathartic, nature not known. The pain grew very much worse after the cathartic was given but was partially relieved when his bowels moved. For a short time he

obtained some relief by hot applications to the abdomen but the pain increased greatly in severity and by morning the child was much worse. A physician saw him late that afternoon but what was done I do not know. I was called the next morning to perform an operation. Upon my arrival I found the following: abdomen greatly distended, absolute board-like rigidity of the entire abdominal wall, pulse barely felt at the wrist and about 140, entire body bathed with a cold clammy sweat, the facies characteristic of intense pain, the child moaning with pain and partially conscious. Under the conditions I declined to open the boy and he died in about an hour after my arrival. Autopsy not allowed.

CASE II.—Patient aged five, a healthy rugged child with no history of any previous serious illness was seen in consultation with Dr. H. L. Putnam. While playing with some other children he fell striking his abdomen on a large pointed rock. He came home, crying of pain and complaining of soreness in the right lower abdominal quadrant. For some forty-eight hours there was not much change excepting that the pain was getting more severe and the bowels had not moved. He was seen by Dr. Putnam forty-eight hours after the accident who found nothing but a general tenderness of the abdomen, low down on the right. There was no muscular rigidity, no rise of temperature and very slight acceleration of the pulse. During the night the child's condition became worse and I saw him with Dr. Putnam the next morning. T. 100.2, pulse 120, general distention of the abdomen, rigidity of both recti but more marked on the right, low down, some nausea, and patient had vomited a little. A carefully given enema resulting in a large bowel movement with the expulsion of a large amount of flatus with marked relief. The probably nature of the case with the danger of delay was explained to the parents but they were very anxious to defer operation if possible. In view of the uncertainty of the nature of the trouble anything by mouth was absolutely forbidden, small amounts of saline were given by rectum and an icebag applied over the site of the pain. That night the child begged so for water that it was given and very promptly vomited. For three days there seemed to be an improvement in the boy's condition until late in the afternoon of the third day he became much worse. The pain increased in intensity the rigidity which had been much less became more marked, the pulse became rapid and the temperature shot up. I saw him at 5 P. M. and immediate preparation was made for operation which was done an hour later. Under the anesthetic a mass could be made out in the lower right abdominal quadrant and opening made over it. A large abscess lying external to the cecum was encountered and contained a pint of very foul smelling pus. The abscess was fairly well walled off and the appendix did not present itself and was not searched for. A direct opening into the cecum could be plainly felt. The pus was wiped out, a drain placed in the cavity of the abscess and into the pelvis

and the patient returned to bed in Fowler's position. The next morning there was a betterment of the patient's condition but he was a very sick boy for some five days. The discharge was profuse, foul smelling and very irritating to the skin. There is nothing of import in the after-treatment and the child had a solid wound in six weeks. He has since remained well.

CASE III.—Seen in consultation with Dr. P. L. B. Ebbett of Hodgdon. F. M., age six. While this patient has never been considered a robust child she has never suffered from any severe illness. About a year before the accident she suffered from enlarged tonsils and bilateral enlargement of the glands of the neck. Following the removal of the tonsils there was complete disappearance of the enlarged glands. I saw the child on the fifth of January, 1908, some six weeks after her accident, the history of which and subsequent course of the case is as follows: While engaged in play in the school-room the patient fell striking on the corner of a desk, receiving the force of the blow in the epigastrium. The pain was quite severe for a few minutes but soon passed away. There was no nausea or vomiting. For the next three or four days she complained to her parents of severe paroxysmal pain in the abdomen, not localized and a general feeling of lassitude. After the lapse of some four days the pain became more or less constant and more severe. She was seen by Dr. Ebbett who made a very careful examination but could find nothing of import. There was a slight distention of the abdomen, but no increase of pulse rate, rise of temperature, muscular rigidity, nausea or vomiting. The bowels were moving naturally but the child still complained of the pain. The pain continued and she began to refuse her food. There was a loss of flesh and strength but no fever. Conditions progressed in this manner until the latter part of December when a small furuncular swelling appeared at the left of the umbilicus. This ruptured spontaneously and the discharge was without odor for a period of some forty-eight hours. This was described as a "creamy" looking material. The bowel movements now became clay colored, of a putty like consistency and of a most foul odor. Examination showed an increase in the muscular rigidity of the entire abdomen, the pulse and temperature began to run a septic course and there was loss of flesh and strength very rapidly. The extreme gravity of the case was explained to the parents and operation was strongly advised. I saw the child the fifth of January. Her condition was as follows: Patient very much emaciated, skin greasy, icteric and covered with a cold clammy sweat, the eyes were staring, sunken, the facial expression that of an extremely sick person. The abdomen was distended, board like in rigidity which was more marked in the upper part and an area of flatness could be made out extending across the entire abdomen above the umbilicus. The child was put under very slight anesthesia and the abdomen opened, to the left of the umbilicus, the incision taking in the fistulous tract

mentioned above. Evidence of fat necrosis was present everywhere. The pancreas was reached by going through the gastrocolic omentum and one entered a large abscess cavity filled with a large amount of greenish slough and foul smelling pus. This was rapidly sponged out and the edges of the omentum stitched to the peritoneum. Two large cigarette drains were placed in the cavity and the child returned to bed in a very precarious condition. The after-treatment was symptomatic. The discharge was enormous and unless great care was taken would severely excoriate the skin. This was overcome by the use of a weak ointment of ammoniated mercury in lanolin. Stimulation was obtained by the repeated use of small enemata of hot saline and small doses of strychnin and whiskey. Her condition gradually began to improve and there was a decided gain in flesh and strength. The sinus was not completely closed until the following November when she was brought into my office. I have seen her several times since and she presents the picture of perfect health.

CASE IV.—Seen with Dr. F. O. Hill of Monticello on October 4, 1909. Patient was a boy age seven and in good health. He sustained the following accident. While riding upon a low truck wagon he fell off, the rear wheel passing over his body. He was immediately taken home and was seen by Dr. Hill within a short time. The boy was conscious and was able to give Dr. Hill a very intelligent account of the accident. Examination by the doctor showed an abdomen free from marks of violence, the abdominal muscles were very rigid, there was distention which was increasing in a most appreciable manner and the pulse was going up and becoming weaker. On my arrival an hour later I found the above symptoms which were becoming more pronounced and agreed with the diagnosis of a ruptured liver. The child was immediately prepared and the abdomen opened to the right of the umbilicus in the median line. A point that struck us was the enormous congestion of the peritoneal veins, before incising this membrane and the force with which the blood was expelled from the peritoneal cavity on its being opened. A rapid examination of all of the viscera showed no lesion excepting a rupture of the right lobe of the liver, which extended from the diaphragm to the free border, and which was bleeding very profusely. The rupture was clear cut, as if made with a sharp instrument. The patient was placed in the reverse Trendelenburg which brought the liver wound into very easy touch. It was sutured with interrupted stitches of iodized catgut number 2. The hemostasis was complete and the abdomen was closed without drainage. The stimulation from hot saline by rectum was very prompt in showing beneficial effects and recovery was prompt and without anything of import. Present health is excellent.

CASE V.—A boy age six was seen a few weeks after the above case. He attempted to get on a wagon which was moving and was caught between the body and the rear wheel. His screams

caused the driver to stop and the child was taken into this home in a state of collapse. I saw him in association with Dr. F. W. Mann within a few minutes and we found the following. Patient in shock, covered with cold clammy sweat, could be aroused but would lapse into a semi-conscious state, pulse rapid and weak and gaining in rapidity, abdomen showed an ecchymotic area on the left side extending from the ribs to the crest of the ileum, there was marked rigidity of the abdominal muscles and the distention of the abdomen was becoming more and more marked. The extreme condition of the child was explained to the mother and the outcome unless operation was immediately performed. She did not care to assume the responsibility in the absence of the boy's father but on his arrival about an hour later the condition of the patient was such that operation was out of the question. He was unconscious, pulse could not be felt at the wrist, and he died within a short time.

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UTERINE PERFORATION, LACERATION OF THE SMALL
INTESTINE, RESECTION, HYSTERORRHAPHY.

BY

SOLOMON WIENER, M. D.,

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As long as many physicians continue to regard the emptying of the pregnant uterus as a minor proceeding to be lightly undertaken without due preparation, just so long will serious and deplorable accidents continue to occur. It would require hours to review the records of the morbidity and mortality following perforation of the gravid womb published in the last twenty years. Yet it is probable that only a small proportion of the total number of cases is ever published. The list is appalling.

In skilled hands this accident is almost wholly avoidable, and the mortality attendant upon removing the products of conception should, *per se*, be nil. Hence a warning note cannot be too often or too urgently sounded.

CASE.—Mrs. Lilian W., twenty-eight years of age. Married eight years. One child seven years ago. Two spontaneous miscarriages, six and four years ago respectively, both at about the third month of gestation. Menstruation always regular, every four weeks. The last menstruation had occurred June 15, 1910. On September 19, the patient slipped and fell on the street,

striking on her buttocks. This was followed at once by abdominal pain and bleeding per vaginum. She was taken to the nearest physician's office and the vagina was packed. The next day, pain and bleeding persisting, an attempt was made to empty the uterus. After the removal of considerable masses of tissue with the placental forceps, the doctor saw that he had pulled down a loop of intestine into the vagina. This was replaced at once and the uterus firmly packed. I was called in consultation and saw the patient about two hours later. She was strikingly pale and complained of severe abdominal pain. The abdomen was flat, and there were moderate rigidity and very marked tenderness over its lower half; slight dullness in the flanks. The pulse was eighty-five, soft, and of fair force. The gauze packing was not disturbed and no further examination was made. The patient was ordered transferred to Mount Sinai Hospital.

On admission to the hospital her condition was but slightly changed. Pulse 112. Temperature 100°F. The abdomen was slightly distended, the rigidity more marked, and there was now moveable dullness in the flanks.

On the operating table the original packing was removed and the vagina disinfected with tincture of iodine. The cervix was found contracted. It was dilated, at first instrumentally, and then manually, until two fingers could be passed into the uterine cavity. To my surprise it was completely empty. Posteriorly on the left side, close to the fundus was a large perforation into the peritoneal cavity. There was moderate bleeding going on, and the uterus and vagina were packed with bismuth gauze.

Laparotomy: median hypogastric incision. On opening the peritoneum about a liter of blood gushed forth. A mutilated fetus of three months was found floating among the intestines. Just below and posterior to the left cornu of the uterus was an irregular perforation three centimeters in diameter. The edges of the tear were trimmed and it was closed with five interrupted sutures of number 2 plain catgut. Further rapid exploration of the abdomen revealed a discolored collapsed loop of small intestine. This was delivered into the wound and it was found that eleven centimeters of gut had been torn from their mesenteric attachment. There was a perforation into the lumen of the gut large enough to admit the tip of the index finger near the center of this torn loop, and a second smaller perforation nearby. The injured intestine was carefully packed off, clamps were applied, and fifteen centimeters were resected. The torn mesentery presented a number of bleeding points which were caught and tied. An end-to-end anastomosis was now done with a Murphy button reinforced by Lembert sutures of linen thread. The mesentery was sutured with plain catgut. The loop was replaced into the abdomen and the peritoneal toilet completed. Finally a large Mickulicz tampon of plain gauze was introduced into the culdesac of Douglas and brought out along the posterior surfaces of the uterus through the lower angle of the wound. The abdo-

men was closed by layer suture in the usual manner. Time of operation, fifty minutes.

An intravenous saline infusion was given on the table with immediate improvement of the pulse and general condition. The day after operation the temperature rose to 103° F.; it fell to 101° F., on the second day, and gradually reached the normal in ten days. Convalescence was steady and uneventful; there was no intestinal leakage. The packings were gradually removed, the outer layer of the Mickulicz tampon coming away on the tenth day. The patient left the hospital with a superficial granulating wound on the twenty-second day. She had not yet passed the Murphy button. One week ago (three months after operation) she was in excellent health. There was a firm scar with no sign of a hernia. The uterus was of normal size, freely movable, and in good position. She was not conscious of having passed the button, but a skiagraph of the entire abdomen showed that it was gone.

Given a legitimate indication for emptying the uterus, what shall be our method of procedure? Before the third month of gestation all indications can be met by careful aseptic curettage. Even at this early stage however, it is highly desirable to use the finger to separate the ovum from the uterine wall, whenever the cervix can be sufficiently dilated to permit its entrance.

After the beginning of the third month our first endeavor must always be to obtain sufficient dilatation. This will be best accomplished by packing the cervix and vagina with gauze or, when ever possible, by the insertion of a metreurynter. The gauze packing may be supplemented by passing a stiff bougie carefully up to the fundus uteri to stimulate contractions. In from twelve to twenty-four hours the cervix will have softened very considerably and will readily admit one finger. In many cases uterine contraction will proceed regularly and the further process of expulsion can be left to nature. When this does not occur, or when hemorrhage, or some other urgent indication supervenes, we proceed as follows: The patient is anesthetized and placed in the lithotomy position on a table. The cervix is gradually and gently stretched with the Goodel dilator until it will admit two fingers. Rarely this will not be possible without undue violence. In that event, if rapid delivery be imperative, anterior vaginal hysterotomy is performed. Under no circumstances should one proceed without dilation sufficient to admit two fingers into the uterine cavity. To omit this precaution spells disaster!

After the end of the third month it is highly desirable to obtain further dilatation manually. If one's fingers are reasonably

small and due care is exercised, no serious laceration of the cervix will occur.

Having obtained satisfactory dilatation, two or three fingers or the whole hand are passed into the uterus. The other hand grasps and depresses the fundus through the abdominal wall. The fingers now gently sweep around the uterine cavity and detach the placenta from its insertion. If one works in the proper plane of cleavage little or no hemorrhage results. Often it is possible to maintain the integrity of the bag of membranes, and to remove fetus and placenta en masse. If the membranes have been ruptured, the fetus is extracted first and then the placenta; but no attempt is made to remove placental tissue until the entire organ has been detached from the uterine wall. The finger once more enters the uterine cavity and determines that it is smooth and clean; then a hot intra-uterine irrigation of normal salt solution is given. Finally the vagina only is packed, and an intramuscular injection of a rapidly absorbable preparation of ergotin is given as a prophylactic against secondary hemorrhage.

In the writer's experience no instrument, other than the gloved hand, has been found necessary to separate the placenta from the uterine wall. Once it is lying detached in the uterine cavity it may be necessary, in the earlier months of pregnancy, to extract it with forceps. But we repeat, no instrument should ever be used before the placenta is fully detached. The custom of passing a placental forceps through a partially dilated cervix and tearing away tissue cannot be too strongly condemned. Serious hemorrhage is almost inevitable, and the terrible catastrophe of perforating the uterine wall and lacerating abdominal viscera is ever imminent.

When small pieces of placental tissue have remained adherent to the uterine wall it may become necessary to resort to the curette for their removal. The largest size sharp curette should be very gently used for this purpose. The dull curette requires far too much pressure to be a safe instrument. In any event we must remember that in curetting the relaxed puerperal or post-abortion uterus we are venturing upon very thin ice, and should ever be on the alert to recognize a perforation the instant it occurs.

What course shall we pursue once the uterine wall has been perforated? All further manipulation should cease. Intra-uterine irrigation should be dispensed with; the uterus and vagina packed; the patient placed in the Fowler position with an ice

bag to the hypogastrium, and further developments awaited. Barring peritoneal infection, the majority of cases will show no further ill effects. If the uterus has not yet been completely emptied this may be undertaken at a future time. However, if the accident has not been at once recognized, if there has been intraperitoneal manipulation with the curette or placental forceps, or if omentum or intestines have actually been drawn down into the vagina, an exploratory laparotomy is urgently indicated. This should be performed just as soon as proper preparations can be made. A few hours may decide the question of the life or death of the patient. To await the development of active symptoms of a septic peritonitis, or the collapse supervening upon intra-abdominal hemorrhage may turn the scale in favor of a fatal issue. The exact method of procedure after opening the abdomen must be determined by the conditions met with. No class of cases puts a severer strain upon the surgical judgment and technical skill of the operator, and he must be prepared to cope with all sorts of emergencies. For this reason the transportation of the patient to a well equipped hospital is to be strongly recommended.

67 WEST EIGHTY-NINTH STREET.

FIBROID TUMORS COMPLICATING PREGNANCY, LABOR, AND THE PUERPERIUM.*

BY
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THE complication of pregnancy and labor with fibroid tumors and of fibroid tumors with pregnancy and labor are conditions which coexist more frequently than has heretofore been taught in our text-books.

Frankel states that one-third of the married women having these tumors have but one child. Kottmann has investigated 400 myomata and says, "they are more frequent in married women who have not borne children than in any other class of patients."

Pinard states that out of 13,915 women at the Baudeloque clinic eighty-four had fibroma. These eighty-four cases were all primipara over thirty years of age, or secundipara with first

* Read before the Southern Surgical and Gynecological Association, December 15, 1910.

labor, ten or twelve years previously. Pinard considers prolonged uterine inactivity to be the real cause of fibroma.

Bonnifield in a paper read before this Society states that he has himself seen eight cases of these complications requiring operations, and had seen many others in his private and consultation practice which required no operation. Six cases were reported in the discussion of his paper requiring operation.

Chadwick reported in the second volume of the Transactions of the American Gynecological Society, nine cases of pregnancy complicated by fibroid tumors, in which placenta previa coexisted as a supposed result of the interfering presence of the tumor in eight cases, and in one case a large growth in the posterior uterine wall prevented delivery and caused the death of the woman from rupture of the uterus.

While we cannot say much in regard to their etiology, fibroid tumors are apparently the chief penalty which married women pay for their practical celibacy or race suicide as it has been recently called.

This complication acts much like a two edged sword when we agree with Bonnifield and others that one child sterility and race suicide predispose women to the development of fibroid tumors, and that previously existing fibroid tumors predispose to sterility in one of three ways or by a combination of them all. Submucus and interstitial fibroids cause hypertrophic endometritis and diseases of the uterine appendages, and may displace the cervix so as to interfere greatly with conception, if they do not prevent it altogether.

Notwithstanding all these obstacles to fecundation, pregnancy does actually coexist with fibroid tumors more frequently than one would suppose probable or even possible.

When pregnancy does occur in a fibroid uterus the cause of sterility, above referred to frequently operates to start up an abortion, which on account of the probability of hemorrhage which we may be unable to control, and sepsis which we may be unable to prevent, creates a situation which is hardly less dangerous than the complication of myomata with full term pregnancy.

The diagnosis of these complications is sometimes easy—often exceedingly difficult and even when suspected well nigh impossible. While we may nearly always determine the presence of these growths we may often be unable, according to Montgomery to appreciate the existence of pregnancy.

Small fibroids the size of an orange or fetal head, when situated low down in the uterus, may cause much more trouble and risk to the patient, than large tumors may when attached to the fundus or subperitoneal.

The effects of the complications mentioned in the title of this brief paper, may be referred to under three separate heads, to wit:

1. The influence of fibroid tumors on pregnancy.
2. The influence of pregnancy on previously existing fibroid tumors.
3. The influence of fibroid tumors on labor and the puerperium.

As more than 50 per cent of myomatous women are sterile from this cause alone, we are fortunately called upon to treat only a comparatively small proportion of pregnant women, who are suffering from the complicating presence of a fibroid tumor. However, accumulative evidence goes to show this complication to be more frequent than we have heretofore taught.

The influence of previously existing fibroid tumors upon the pregnancy may be dogmatically stated as follows:

1. If attached to the fundus or if subperitoneal, little or no trouble need be feared.
2. If interstitial and encroaching upon the uterine cavity, we may expect malposition of the fetus, placenta previa, interference with uterine contractions, and hemorrhage during labor and abortion.
3. If submucous, abortion, hemorrhage and sepsis.
4. If located in or about the cervix, they may prevent delivery at full term altogether, or if delivery be accomplished through obstetrical surgery, it is likely to be followed by hemorrhage and sepsis.
5. If intraligamentous or intrapelvic, they may cause all the trouble just stated if they cannot be pushed up out of the way.
6. Small fibroids attached high up with long pedicles, may, if they become displaced low down in the pelvis, produce all the "dangers" which tumors do when growing in this position, unless they can be dislodged by digital manipulation.
7. Fibromata have been stated to be a cause of extrauterine pregnancy undiscovered, however, until time of rupture and emergency operation.

INFLUENCE OF PREGNANCY ON FIBROID TUMORS.

1. It causes their more rapid growth on account of increased vascularity of the uterus.

2. It may cause their impaction in the pelvis and subsequent adhesions.

3. The intraligamentous variety may cause intolerable pain by being crowded against the pelvic tissues and organs, causing necrosis and sloughing, unless relieved by a sudden life-saving operation.

4. Submucous and cervical fibroids may be expelled into the vagina and be safely removed.

5. Peritonitis and sepsis may be caused by the necrosis and sloughing of a fibroid whose circulation has been disturbed by pressure inside or outside of the uterus.

THE INFLUENCE OF FIBROID TUMORS ON LABOR.

1. If small and high up, or large and of the subperitoneal variety, little or no trouble may be expected from their presence.

2. If situated in the pelvis both large and small tumors may so interfere with the delivery of the child as to require obstetrical surgery, unless we may be able as labor progresses to push them up out of the way.

3. Cervical fibroids may get in the way of the presenting part and thus make natural delivery impossible, requiring the performance of Cesarean section or hysterectomy to save the life of mother or child.

Fibroids may complicate the puerperal state by provoking hemorrhage from their interference with uterine contractions, or by sloughing as a result of their compression during labor, and causing sepsis from the absorption of putrid and infectious material.

The "special dangers" of these "complications" have been mentioned for the most part in the discussion of their variety, location, and their unfavorable "influence" on pregnancy, labor, and the puerperium. Mention might also be properly made of the dangers to patients of the various obstetrical and surgical procedures instituted for their relief. These operative methods all have a morbidity and most of them a mortality of their own, but when resorted to on account of the presence of fibroid tumors interfering with delivery, added dangers arise which are peculiar to the situation.

Davis of Philadelphia says, "This complication is capable of presenting one of the most troublesome, at times one of the most appalling and dangerous, questions, which is likely to demand

the most experienced judgment and skill of the obstetrical surgeon."

Not one of the least dangers which the patient has to face is that of unwise interference and "meddlesome midwifery."

The consensus of opinion of the most recent obstetrical authorities, so far as I have been able to ascertain it, seems to be, when there is an absence of any of the possible emergencies in these cases, to let the patient religiously alone, practising watchful and expectant treatment. After our diagnosis is made we should be watchful, and some kind of arrangement should be made for the safest management of these patients compatible with their means and environments.

If they are near the end of pregnancy a good hospital would be the safest place of residence.

The methods of treatment for consideration are:

1. To let the patient alone in the absence of symptoms, not operating simply on account of the presence of a tumor which *may* occasion some or any of the dangers above referred to, especially in the first half of pregnancy.

2. The consideration of the question of emptying the uterus, the decision resting with competent consultants.

3. The removal of tumors likely to interfere with delivery which can be safely reached through the vagina, without invading the uterine cavity.

4. Such obstetrical operations as may be indicated in the course of the labor to be also performed through the vagina; namely, forceps, version, embryotomy, and the combination of outside abdominal and inside vaginal efforts to push up movable tumors out of the way of the presenting part.

5. Abdominal operations as indicated, myomectomy, Cesarean section, the Porro operation, supravaginal hysterectomy.

THE PATHOLOGICAL ERA VERSUS THE PHYSIOLOGICAL IN THE SURGICAL TREATMENT OF INTRA-ABDOMINAL INFECTIONS.¹

FROM THE CLINIC OF DR. JOSEPH PRICE.

BY

J. W. KENNEDY, M. D.,
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(With Six Illustrations)

To review the history of intraabdominal infections from the dawn of the anti-and aseptic eras to the present day would be a recital of a gradual and progressive onslaught upon intra-abdominal lesions. Precept upon precept, the veteran operators advanced the operative procedures from a mere incision for a bursting abdomen distended with pus to the most complete and finished toilets of the present hour, made possible by a knowledge of asepsis. Within the last year a great revolution has dominated the American profession and the physiological era in surgery is born. With the advent of this era in the treatment of peritonitis, we are practically asked to step back twenty-five years. We are taught, the courage gained and earned through our knowledge of bacteriology has made us too bold in dealing with infectious lesions of the abdomen. How reluctantly should we take the first step in regression of progress! The adoption of the physiological era of surgery, as practised and understood by the great majority of our profession, is the most lamentable step of a progressing profession.

Our present knowledge of asepsis has permitted us to study living pathology. It has not only permitted us to do radical surgery, but grants us the privilege of early investigation and should give any competent surgeon practically a *nil* mortality. If the physiological era takes from us a single privilege or means of early recognition of intraabdominal infections, or in any way cramps our surgical limitations, I view the era with profound apprehension and regret. I make this statement with no little feeling, as I already see that the physiological era will give us later and more complicated surgery and timid surgeons to do the complicated work; an incompatibility of surgical affairs we should not be called upon to witness. If the regression in

¹Presented at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists held at Syracuse, September, 20-22, 1910.

progress in the next ten years is as rapid as it has been in the last year, at the expiration of a decade we will again be simply lancing the abdominal walls for intraabdominal infections, just where we began at the advent of asepsis.

Less than twenty years ago, in a discussion of three papers on appendicitis read by Dr. Joseph Price, W. W. Keen and the late T. S. K. Morton, the late Wm. Pepper, one of the most advanced teachers of internal medicine of his time said, "I believe if every case of appendicitis was operated upon the mortality would be increased ten fold." How merciful has been

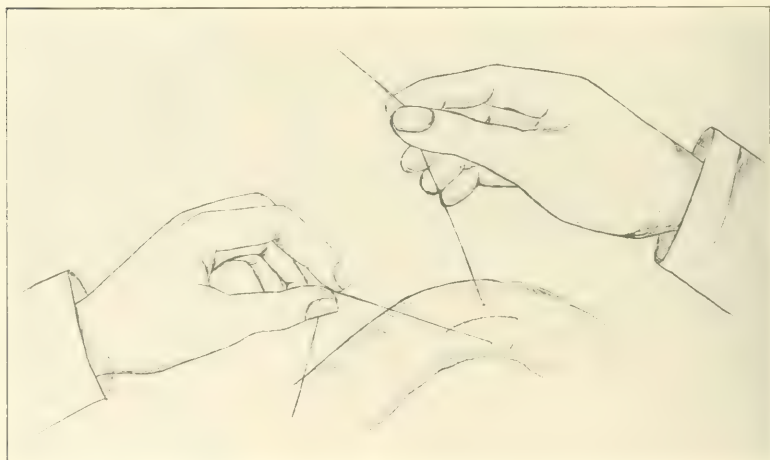


FIG. 1.—Tail of suture held in the left hand, beneath the right hand.

the revolution! In less than twenty years the words of this distinguished teacher have been blotted out by modern surgery. There is probably not a noted operator in America who could not enumerate 1000 operations for appendicitis without a death.

In the last ten years I have not seen a death from the removal of an appendix. So we have a very just pride in our surgical dealings with infectious lesions. The surgery of the past twenty-five years may be defined as the pathological era, in that we have been making strenuous efforts to deal boldly with pathological lesions and their complications—namely, adhesions, obstructions, perforations, etc.; or, in other words, we have been seeking the distal infecting source and applying its surgical remedy.

The physiological era deals less radically with infections,

its surgery being modified as to time and extent of execution, depending upon nature of infection and stage of infectious involvement. Is it founded upon a substantial basis? The element of doubt as to extent of inflammatory involvement at any given time should prevent an attempt at any such distinction. However, the physiological era in surgery asks us to be less radical in our execution and manipulation, in order to prevent peritoneal absorption of toxins and bacteria. A superficial view of this advice might appeal to one if we had but the one

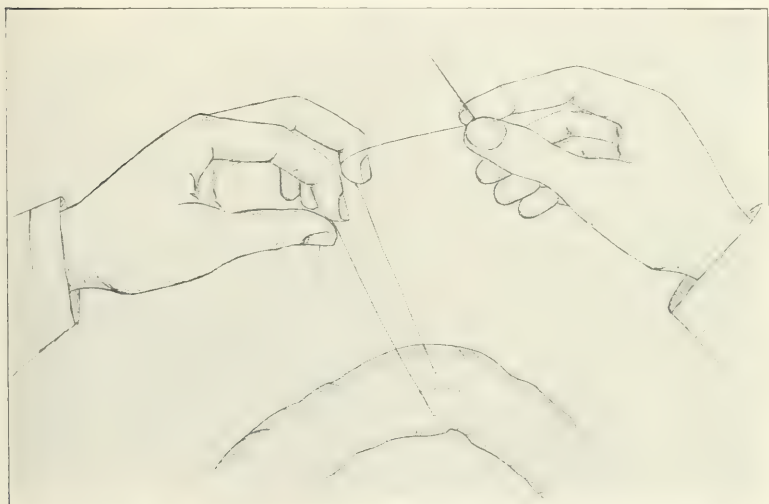


FIG. 2.—Making traction, with middle finger of left hand, of needle end of the suture.

enemy to combat—namely, peritoneal absorption; but when you attempt to minimize peritoneal absorption through less radical surgery you have been flanked by intestinal obstruction, distal abscess, and that ever fatal perforation that remains unclosed through surgical timidity, born from fear of peritoneal absorption.

No operator, living or dead, has had a greater experience with intraabdominal pus than Joseph Price, and it can be truthfully said that no operator has been so consistent in his radical toilets with intraabdominal infectious lesions. An intimate association and a many years' apprenticeship under this great master makes me a most ardent advocate of first-hour work with radical toilets. It appeals to me as a completed work.

I am in a position to say that any operator who fails to remove a gangrenous or suppurative organ or fails to close a perforated lesion lest he increase peritoneal absorption advances a theory which is untenable; it has not sufficient surgical dignity to permit of discussion. I believe the peritoneum welcomes the surgically clean finger as it is insinuated between the matted viscera over the infected roads which lead toward the distal infecting source. Each adhesion broken, each obstruction relieved, is an important step in surgical drainage and it must be clearly evident to the thinking mind that drainage is the most potent factor in prevention of peritoneal absorption. It has gotten to this condition of affairs, "you will be damned if you do and damned if you don't." One operator is afraid to seek the distal infecting source lest he increases peritoneal absorption and the other seeks the source of infection to prevent subsequent infections, complications, and absorption. In all infectious lesions of the abdomen we must have a broader view than the mere involvement of a vast plain of endothelial membrane, parietal and visceral.

In a general peritonitis, were it not for the absorption of toxins and bacteria from the mucous coat of an obstructed or partially obstructed bowel, this grave lesion would often be robbed of its fatal termination. You can no more afford to ignore the complications of a peritonitis, obstructions, adhesions, etc., which are resultant and coexistent, than you have a right to turn your back upon a strangulated bowel when existing as a lesion *per se*. The presence of a peritonitis should not so entertain you surgically, as to make you unmindful of lesions produced and existing as fatal complications.

Operators do not seem to be familiar with the fact that adhesions and obstructions take place very early in peritonitis. Some interesting experiments have been made to show that adhesions forming in a few hours can cause a bowel obstruction. I have seen a number of instances of total bowel obstruction from an adhesion of no more strength than wet blotting paper. The physiological era of surgery has for its foundation prevention of peritoneal absorption. For a number of good reasons I am not of the opinion that much absorption takes place after the general peritoneum is involved.

Mr. Moynihan, in his charming book on living pathology, calls attention to some interesting experiments by Erhardt on the bile ducts. When the ducts were incised and the bile allowed

to flow into the normal peritoneal cavity the animal died from a vicious toxemia without any signs of peritonitis; but in those experiments where a culture of colon bacillus was added with a resultant plastic peritonitis the bile was absorbed much more slowly and the animals lived many days. It is our rule in Dr. Price's hospital, in those pitifully neglected patients with a general peritonitis with distention, after a completed toilet to put the patients in bed with the foot well elevated.

Now, experiments reveal that the normal peritoneum of the upper abdomen is most rich in power of absorption of toxins and,

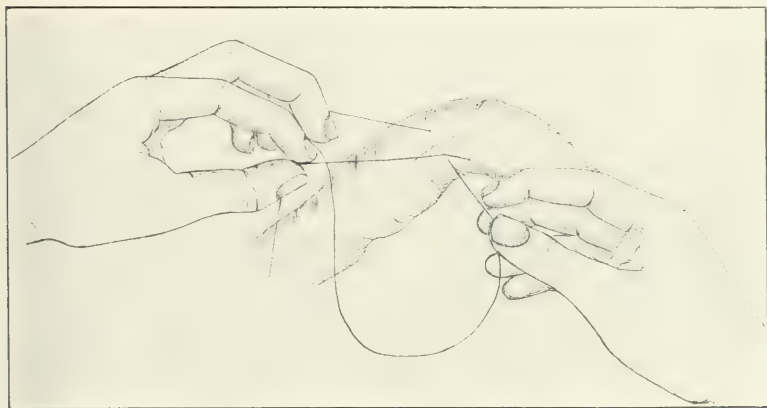


FIG. 3.—Temporarily fixing the suture, by pressure between the middle and index finger.

therefore, the Fowler position is one of the important factors of the physiological era in the treatment of peritonitis. If it is not true that peritoneal absorption is greatly retarded by the inflammatory lesion, how can we with prudence and success place our patients in the reversed Fowler position? We feel that even the peritonitic peritoneum is more our friend than enemy, and for this reason we firmly insist that all lacerations and abrasions of the peritoneum should be immediately closed with fine silk.

From a number of requests I have by a series of drawings, diagrammatically illustrated, Dr. Price's method of using the small cambric needle with oo silk to repair these abrasions. By keeping the needle constantly in the hand this fine repair work can be done with great rapidity and precision. The charts are self-explanatory. If one will review his experience with

inflammatory conditions of the abdomen, it will be made apparent that the mortality is not always proportionate to the mere amount of involvement of the peritoneum, but that it is proportionate to the complications of the peritonitis—namely, adhesions, obstructions, distal abscesses, or due to the location of the primary infecting source. The appendix in the retrocecal position will give an early death with few symptoms of peritonitis. There may be little or no distention, very little tenderness, a comfortable patient, but a chill and the increase pulse rate tell the story. Will the physiological operator of the future be familiar with the symptomatology of the deeper lesions; will he be prepared to cope with the complications which follow his imperfect work? Can a teacher say to 500 pupils that an operator's duty is practically ended when he discovers pus in the abdominal cavity? Will not this teacher's surgical offspring be a most helpless fellow; will not his view of living pathology degenerate?

In comparison, how little value has been our knowledge gained from postmortems compared with that of living pathology seen on the operating-table? From a large associate and personal experience I am prepared to say that the profession is not justified in its contention, that dangers of peritoneal absorption prevent the removal of the distal infecting source and its complications. Metchnikoff, in his book on prolongation of life, writes entertainingly in regard to the relations between longevity and the intestinal flora. He calls attention to some striking arguments in favor of the view that intestinal flora shorten life. If this is so in the healthy animal, how can we afford to ignore the absorption which takes place from the peritonitic and obstructed bowel?

Mr. Treves says the mortality of intestinal obstruction was reduced 50 per cent. when we learned to puncture the bowel proximal to the obstruction. This is perfectly familiar to us all and simply means drainage of the bowel. Dr. Murphy truthfully says that the abdominal incision in a peritonitis prevents absorption as it lessens intraabdominal tension. This again is peritoneal drainage. Since the dawn of the physiological era in surgery it is interesting to note the trend of our literature. Numerous symposiums appear on postoperative intestinal obstructions, persistent fistula, secondary operations for distal abscesses, and how to deal with postoperative adhesions.

The nerve specialists are prolific in their literature on postoperative neurasthenia, which simply means that great mor-

bidity which comes from incomplete work. Some small focus or adhesion remains to irritate and nerve rack the patient. In dealing with an intraabdominal condition which has a potential element of sepsis and whose symptomatology is not proportionate to the extent of the pathological lesion, that law or rule which surgically gives us early the greatest number of patients must be adopted.

In reviewing the statistics, it is interesting to note that practically all operators have divided their statistics of appendicitis into two columns. In the first column we find 500 or possibly a 1000 with catarrhal or fibroid appendix without a death.

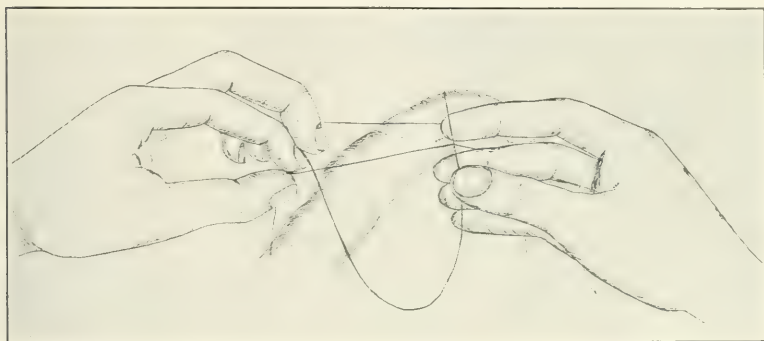


FIG. 4.—Needle held between the middle finger and thumb as it is passed beneath the suture.

In the other, are the septic patients with high mortality. Certainly in educational centers it is within our limitations to push that second column into the first and still have no mortality. It is evidently the fault of the specialist that there exists a mortality in certain septic lesions. For instance, it is the duty of the specialist to familiarize the general profession with the fact that the classical symptoms of appendicitis vary with its anatomical location or position. It is an organ without a known function, therefore we may expect great variance in morphology and location. Darwin in his work on "Origin of Species" says "rudimentary organs from being useless are not regulated by natural selection and hence are variable." A strict adherence to classical symptoms of most any abdominal lesions will lead to diagnostic confusion and bewilderment. Medicine is not an exact science and we cannot apply rules which are mathematical in their execution.

Diagnostic knowledge through chemistry and the microscope are scientific in their revelations, but they are often at error when applied to medicine and surgery. The province of the specialist is just this: he must give the general profession that tangible information which makes him an acute diagnostician and an intimate cooperator for early surgical intervention. This cannot be done by an attempt at classification of symptoms of acute infectious conditions whose character or whose extent of pathological involvement is not in accord with its true symptomatology. I have repeated this. I feel its magnitude and I know it is the stumbling block of our profession. A death from appendicitis is a positive insult to our intelligence of the diagnosis, symptomatology, and treatment of this condition. I have said in a former paper on peritonitis that any death from appendicitis is a human error and that error I will place at the specialist's door until he becomes an advocate of first-hour surgery at any stage of a peritonitis and executes that surgery which removes the distal infecting source. Follow this rule and you will be astonished by the stimulant it is for early work.

In certain communities we were positive before seeing the patient that it was not appendicitis but peritonitis for which we were being called, and even the nurses in packing the bag knew it was useless to put in abdominal sutures, as all incisions were open ones in that community. What occurred? We stopped talking about the symptomatology of catarrhal gangrenous or appendiceal abscess, said nothing about when to operate, and taught that appendicitis simply meant diagnosis and removal of the appendix. To-day we inclose our incisions in these communities and there are no deaths. You may discuss as much as you please the symptomatology of the various forms or varieties of acute infectious lesions of the abdomen, but let your discussions be postoperative with the specimen before you and be sure it is all there.

Some of the most ardent advocates of the physiological era in surgery become positive obstructionists to early work when they speak of the necessity of an inflammatory reaction or leukocytosis before it is safe to enter the abdomen. How about the removal of the big fibroid uterus or cystoma? There is no leukocytosis in these conditions; the surgery is extensive and yet the mortality should not be over 1 per cent. The truth of the matter is, we have advanced our skill through aseptic surgery to that degree of refinement that the only deaths we should have

are where there has been some previous occasion for a leukocytosis. Certainly there is no death rate from the removal of the fibroid or catarrhal appendix. There is little doubt but that the physiological era will give us later work, which means an extension of the pathological condition with its resultant complications, and untrained men to deal with complicated surgery.

Contrast the sequelæ of pathological and physiological surgery. The pathological operator seeks the distal infecting source and removes it or finds the ultimate perforation and closes it. His surgery is practically void of complications. His work was

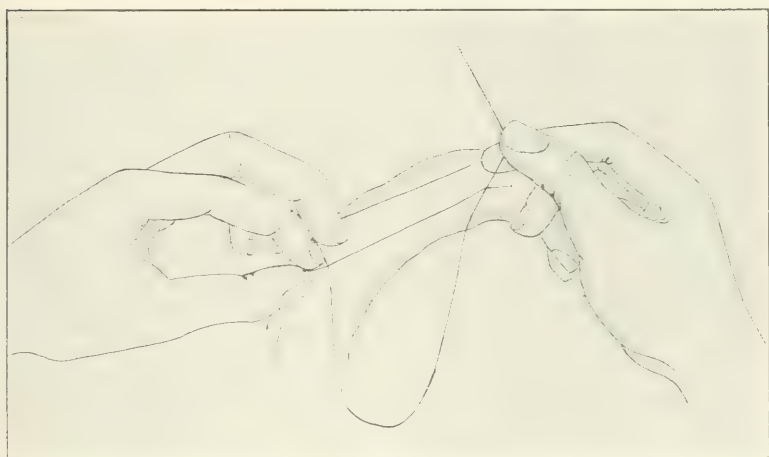


FIG. 5.—Needle advanced by thumb, stepping from middle finger to index, and carried on.

completed primarily. In my report of 500 cases in the *Journal of Surgery, Gynecology and Obstetrics* of diffuse and general peritonitis, demonstrated as such, there was not a patient re-operated upon for postoperative intestinal obstruction or for distal abscess; and the reason is apparent. On the other hand, physiological surgery is followed by great morbidity, complications, surgical neurasthenias, etc., which must follow incomplete work. This is not the age to begin preaching unfinished surgery nor the time to elaborate on minor differences of surgical technic, but is an age of generous asepsis which permits radical surgery. We take the stand in pathological surgery that pus is not a pathological entity but is the trail of the offending lesion; therefore, instead of our surgery ending with presence of pus in the incision, to us it is a command to seek the offender. If primary

mortalities of the physiological and pathological surgeons are the same, how much greater will be the morbidity and complications of the physiological man who is not reaching the primary infecting source. I can scarcely imagine an up-to-date surgeon abandoning an acute infectious lesion, without even an accurate knowledge of whether he has drained a pyosalpinx, perforated gall-bladder or a suppurating appendix. This I apprehend will be one of the destinies of the era of physiological surgery.

Recently, in the Coatsville Hospital, I opened a large abscess bulging at McBurney's point for a supposed suppurating appendix. The patient had every cardinal symptom of appendicitis, even to the large collection of pus at appendicial region. Probably a pint of pus flowed from the incision over the appendix. Had my surgery stopped here, the death certificate would have been appendicitis. Pathological surgery called for the offending source. The appendix was delivered, it was acutely involved but not the source of the pus, which came from a perforated gall-bladder full of stones. The stones were removed, bladder drained, and the patient made a good recovery. It would be uncharitable to say we were wrong in our diagnosis, as I feel that an appendix floating in an abscess cavity might cause even the most skeptical to think of appendicitis. I simply relate this case which is the type of a condition which must add to the mortality of the physiological surgeon.

The very execution of a completed toilet is a strong plea for radical work. Its demonstration of living pathology is an imperative command to seek the root of evil. From an extensive association with pathological surgery for acute infectious lesions of the abdomen, I am in a position to say that no modern surgeon should ask us to witness the unremoved gangrenous appendix, the punctured vaginal vault for pyosalpinx, or the suprapubic drainage of the pyosalpinx with the pathology remaining or mere puncture surgery from above or below, for suppurating ectopic pregnancy, nor should we be asked to view the mere incision and drainage of the dermoid cyst. Nor is it fair to assume that the closure of any single perforative lesion of any viscus is the only perforation, and that further search should be precluded on account of the possibility of spreading infection. Yet we have recently seen all of this by operators who are not willing to accept the privileges of modern aseptic surgery.

When the last fable has been told in regard to differential

operative stages of acute infectious conditions and we are driven as a solid phalanx for first-hour surgery, then, and not until then, will we reach the benefits of the surgical privileges which are within our grasp. If any operator can take more privileges than we, let us discover that operator. I am convinced that the danger of absorption of toxins and bacteria is greater from incomplete toilets than from the radical work of the pathological surgeon. The difficulty is, we have only had in mind the parietal and visceral peritoneum in our conception of absorption.

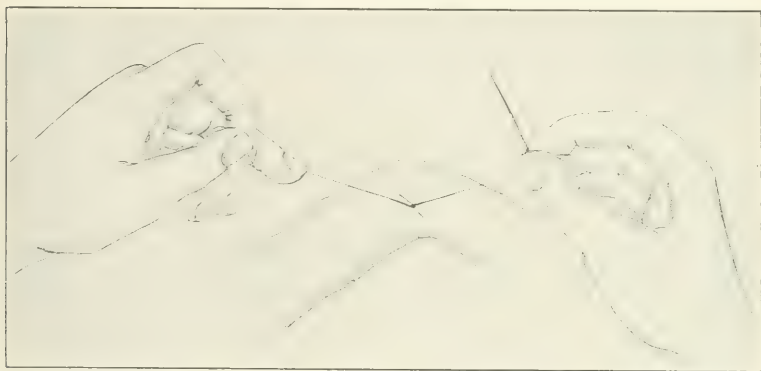


FIG. 6.—Suture seated by slight lateral pressure by the middle finger of the left hand.

In a discussion of pathological surgery of the abdomen one can quickly dismiss the lesion *per se*, but must deal extensively with its complications. Peritonitis as an entity cannot be surgically treated, while its complications remain ignored. If the physiological era of surgery in peritonitis is born to prevent toxic absorption from an endothelial membrane, without surgical respect to the complications of this condition, it is of ignoble birth and frailty will be its monument.

It is my opinion that a patient with a general peritonitis who has no distention but soluble bowel dies from a retroperitoneal infection, which is largely a lymphangitis, thrombosis, and cellulitis. These conditions are the least accessible to surgery, are similar too and have their type in the puerperal infections. Again, in the general peritonic abdomen with obstruction and distention, we cannot dismiss the virulent absorption which takes place from the mucous surface of the obstructed bowel, and I believe this to be a more important

factor in the absorption of toxins than the peritoneal surface. Therefore we cannot adopt that line of surgery which ignores the complications of a peritonitis when the effect of such complications may be the most potent factor in absorption of toxins and bacteria.

In acute infectious conditions of the abdomen I would give the following as some of the good reasons that fatal absorption takes place independently of an extensive peritonitic membrane.

First, we have many examples of vicious and fatal intra-abdominal toxemia independent of a peritonitis.

Second, in a very local peritonitis causing bowel obstruction the patient dies from a toxemia due to absorption of toxins which takes place from the mucous membrane of the obstructed bowel.

Third, a bowel obstruction from any of the numerous causes is a fatal lesion independent of a peritonitis.

Fourth, those deep-seated lesions having their type in the puerperal infection or the appendix in the retrocecal position are fatal lesions before they become a diffuse peritonitis and, indeed, we may say they are fatal before there is truly a peritonitis.

These are all convincing evidences to me, that intraabdominal septic conditions cannot alone be surgically treated along the lines of antiperitoneal absorption. Certainly there has been a retrograde movement in the surgical treatment of septic conditions of the abdomen in the past two years. It is due to incomplete work and from attempts to distinguish between operative and nonoperative stages in peritonitis. The great abundance of literature on postoperative complications and sequelæ show we have not the true surgical range.

Dr. Price with his characteristic epigram comes out with a paper on "Surgical Scrap and Junk." It is the duty of the specialists to turn out more competent operators, men who are grounded in the importance of early and thorough work. The physiological era will not do it. The great personal and financial sacrifice which Dr. Price has undergone in his eagerness to place in every community a competent operator, so that the acute infectious conditions can be met early, is a lesson to us all. The distance has never been too great nor the audience too humble to prevent his leaving personal affairs and giving an object lesson to an eager profession.

SIMULTANEOUS OCCURRENCE OF ADENOCARCINOMA
AND SARCOMA IN THE SAME UTERUS.¹BY
ARTHUR THOMS JONES, M. D.,
Providence, R. I.

(With seven illustrations.)

THE comparative infrequency with which we find these two conditions associated in the same uterus warrants a report of the following case which illustrates the condition very typically and may aid in determining some of the important factors in the condition.

REPORT OF CASE.

May 13, 1910. A. B., age 56, white. Single.

Family History.—Father died of Bright's disease. Mother died of rheumatic fever at the menopause.

Previous History.—Menstruation regular, every four weeks lasting three days, amount moderate. Menopause three years ago. Since then saw slight flow one day only.

Present Illness.—In February, 1910, began to flow profusely for one day, then kept up a little for a week or so. Since then has had slight flow especially when arising at night to urinate one or two ounces of blood would gush out. Has some dull aching pain in back and through pelvis. Frequent urination, appetite good, and has not lost weight appreciably.

Physical Examination.—Patient fairly well nourished, weight 135 pounds. Looks rather anemic and sallow. Vagina rather small caliber, but long. Cervix large and rather hard, bloody discharge coming from os. Uterus large, fundus forward. Posteriorly can be felt a hard mass evidently a myoma. Uterus with mass seems four or five times normal size.

Diagnosis.—Myoma with malignancy.

Operation.—May 18, 1910. Abdominal section. Complete hysterectomy. A sound passed into the uterus 3 inches. Cervix dilated and curettage brought away a large amount of

¹ Presented at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists, held at Syracuse, September 20-22, 1910.

sloughing material of which there seemed a limitless quantity. Hemorrhage very active so curettage not continued, but uterine cavity was immediately packed with gauze. Abdomen then opened by a 5-inch incision and complete hysterectomy done, cutting vagina across below the cervix. There were soft adhesions about both appendages which were swollen and the fimbriated ends of both tubes occluded.

After removing the uterus with its appendages the vault of the vagina was closed with chromic gut sutures, the cut ends of the round ligaments were sewed to the vagina and the peritoneum closed over all with catgut. No enlarged lymph nodes could be palpated. Appendix small and bound down by a band of adhesions. It was removed, stump cauterized and invaginated with purse-string suture. Incision closed in layers with catgut. Skin with horse-hair suture.

Subsequent History.—Good recovery and showed very little evidence of shock from the operation. Ran an afternoon temperature of 101° on seventh and eighth days and on ninth day dressing was done. There was a large amount of sanguinopurulent fluid in the abdominal wound which with daily dressings cleared up very promptly. During the first week in bed there was also a vaginal discharge of the same character which also cleared up promptly.

June 8. Patient up and about.

June 12. Discharged and returned to her home fifteen miles distant.

July 15. Examination at office shows abdominal wound clean and good scar. Vaginal vault perfectly healed, no discharge, no thickening or infiltration in the pelvis about the vaginal vault. Free from pain and urinary symptoms, gaining in weight, color much better and whole general appearance much improved.

Specimen.—Incision of posterior wall of uterus from fundus to cervix shows a myomatous appearing mass, sloughing and broken down. This mass occluded the cervical canal so that the cavity of the uterus contained about 1 1 2 ounces of foul, grumous fluid. Gross appearance of whole uterine mucosa one of advanced malignancy.

Following is the full pathological report by Dr. Harold G. Palmer.

Providence, R. I., June 1, 1910

Report of Examination of Specimen from Uterus. Received May 19, 1910. Clinical Diagnosis, Fibroma. Malignancy.

Pathological Diagnosis: Adenocarcinoma of cervix and of body; myoma with sarcomatous degeneration.

THE specimen is a uterus with appendages complete. An incision has been made in the median line of the posterior surface from cervix to fundus. The peritoneal surface is smooth and presents nothing remarkable. Anteriorly, the organ measures 9.5 cm. in length, 6 cm. between cornua. The uterine canal measures 8.5 cm. The posterior wall below the fundus varies in thickness from 22 to 30 mm. of which fully one-third is occupied by thickened and altered mucosa. The lower uterine segment is attenuated and the line of the internal os is obliterated. The wall at the external os is 6 mm. in thickness and is rather

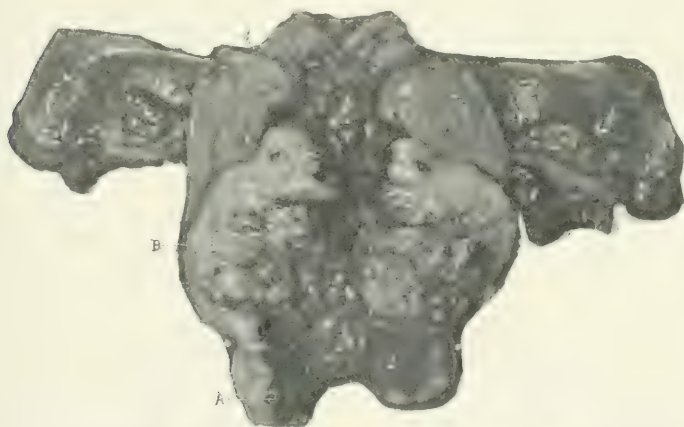


FIG. 1.—Adenocarcinoma of cervix and body; myoma with sarcomatous degeneration.

soft and spongy. Beginning at a point 15 mm. or less within the external os, and hanging down like an apron to the os, there is a deeply injected, spongy mass of tissue which extends upward for 30 mm. at a fairly uniform thickness of 7 mm. Springing from the posterior wall and laterally near the fundus and projecting into the canal there are considerable bosselated masses of tissue the surface of which is yellowish-gray, smooth, and soft, almost gelatinous. This tissue and that already described of the cervix terminate quite abruptly at the upper and lower margins of an extensive tumor mass which involves the lower two-thirds of the body. This tumor, pyriform in shape with stem toward the fundus, springs from the posterior wall, all of which, except 8 mm. at the surface, is included in the growth. It extends forward involving the anterior wall, occluding the uterine canal at a point 30 mm. from the fundus. The cut surface varies in

appearance and texture. The lower, central portion is necrotic and sloughing and much of the substance has been removed with the curette. The intact portion is smooth throughout and soft, centrally yellowish-red to pale yellow shading gradually to the outer border where it is almost white and the tissue firmer and of fibrous consistency. The ovaries and tubes are not remarkable. Tissue taken for section from twelve different areas, balance of specimen preserved in Kaiserling.

MICROSCOPIC EXAMINATION.

Cervix.—The surface is quite destitute of superficial epithelium. A scanty connective-tissue stroma is honeycombed with large, tortuous glands that involve nearly the entire substance of the wall. The glands are lined with cylindrical epithelium

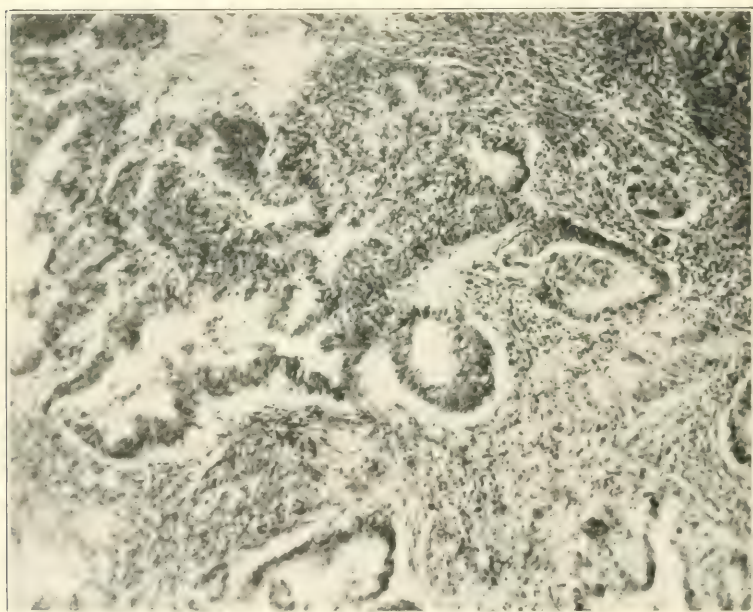


FIG. 2.—Posterior lip of cervix. Section taken at A (Fig. 1), $\times 100$. General structure and arrangement of neoplasm. The stroma is more abundant in this field than in the balance of the section.

of medium height that are usually present in reduplicated layers. Papillary processes consisting of large masses of epithelium clustered about a delicate central stalk projecting into the lumen are of common occurrence. Many of the acini present scattered epithelial cells of unusual size, the nuclei of which are large and have an irregular, deeply staining chromatin network, the cytoplasm generous and clear. In a longitudinal section from the

left side the process does not extend so deep and the bordering muscular tissue shows an extensive round-cell infiltration in the vicinity of the lymph spaces, which in turn appear choked with wandering lymphoid cells of large size.

Body, Left Horn.—The process here, with slight and unimportant variations, is a reproduction of that present in the cervix. The neoplasm does not immediately invade the myometrium to any great extent, but in the lymph spaces deep in the muscle there are considerable groups of transplanted cells. A com-

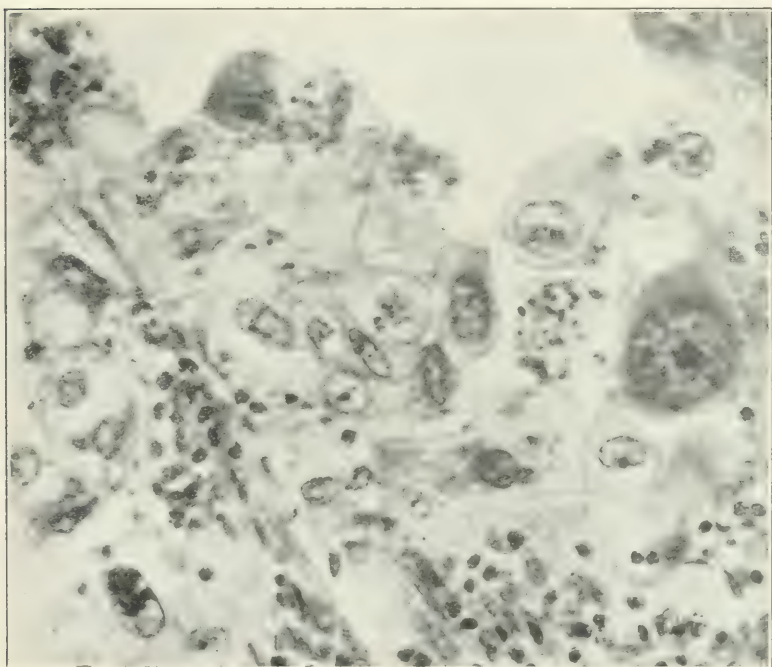


FIG. 3.—Same section as figure 2 but $\times 450$, to show structure of large atypical cells.

parative study of the epithelium of the neoplasm simultaneously present in the body and the cervix develops the interesting fact that the cells, cylindrical in type in both instances, are taller in the former than in the latter location. By actual measurement of individual cells, those of the body average 3 microns higher. The cells in common have large round or oval vesicular nuclei and a generous cytoplasm. In both locations large cells with irregular nuclei rich in chromatin are found indefinitely here and there in the acini. (Figs. 3 and 5.)

Body, Right Horn.—The mucosa is sharply defined from the underlying muscle which is free from epithelial invasion and

round-cell infiltration. There is no surface epithelium but the stroma supports capillary sinuses that are crowded with red cells and leukocytes, forming an inflammatory surface zone. A fairly abundant, cellular stroma supports many hyperplastic glands that are in transition from normal to malignant type. These are generally round, variable in size, often dilated, and in a few instances irregularly winding and tortuous.

The epithelium is low cylindrical with uniform-sized round vesicular nuclei. It is usually present in a single layer, but in

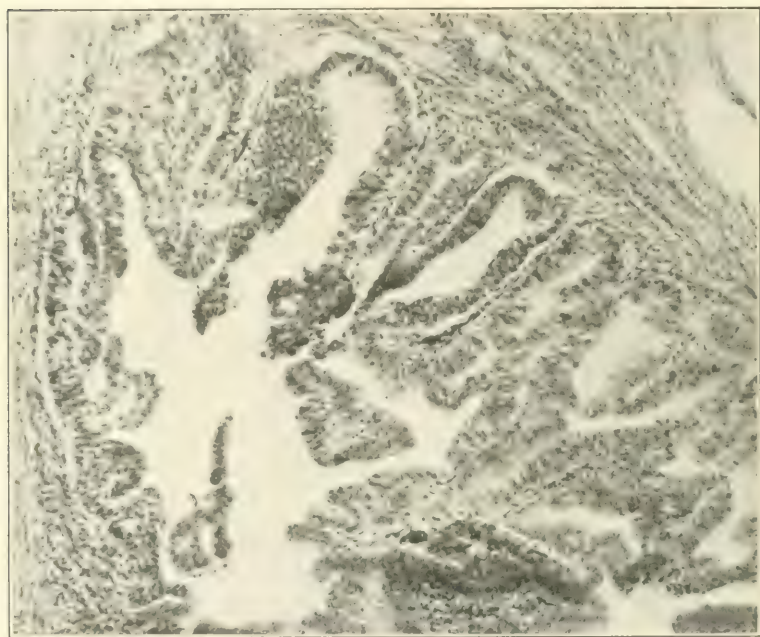


FIG. 4.—Section taken at C (Fig. 1), $\times 100$. Showing general structure.

many areas it is markedly reduplicated and irregular in size and distribution.

The Tumor.—A study of sections taken from six different areas shows a neoplasm which, although partially covered by the lesions of the cervix and body, is distinct from them. Two types of tissue are present—namely, unstriated muscle and young, undifferentiated connective-tissue cells, the latter comprising the major portion of the tumor. (Fig. 6.) The picture presented is of solid masses of closely packed cells that have large nuclei with a generous chromatin network and a scanty cytoplasm that is often so indefinite that the appearance given is of almost solid aggregations of nuclei. There is a minimum of stroma, that present consisting of a few delicate, wavy lines,

penciling its way between small groups of cells. The blood supply is ample. Well developed vessels are present in the myomatous tissue bordering on the growth, but in the substance of the neoplasm endothelial channels are either imperfect or entirely wanting, the blood then being distributed through spaces between the tumor cells. At the lower and inner border the tissue is infiltrated with leukocytes, sloughing and necrotic. Higher up near the point of occlusion of the uterine canal the inner border is covered with a layer of atypical, proliferating

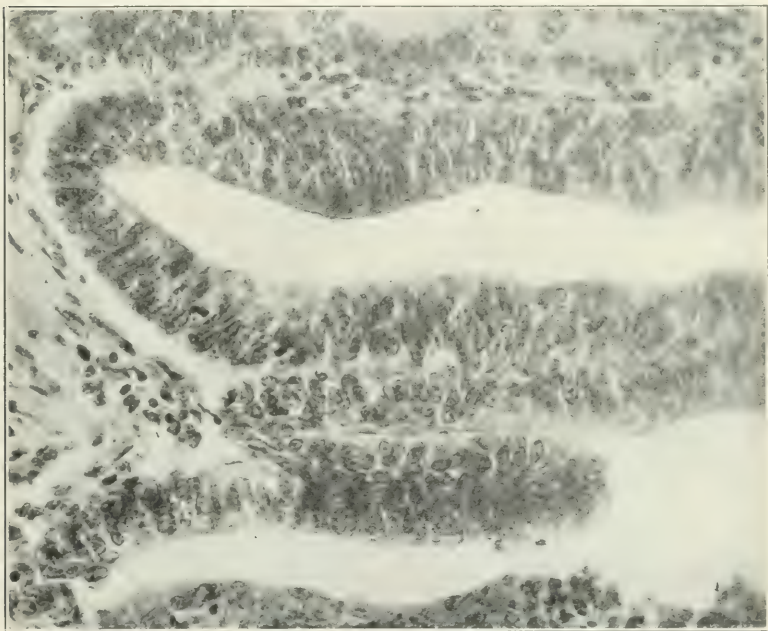


FIG. 5.—Same as figure 4 but $\times 300$. Showing structure and arrangement of epithelium in part of a labyrinthine gland. At the top are very large cells resembling those shown in figure 3.

glands extending in continuity from the glands of the fundus already described. The neoplasms at this point are distinct, a narrow band of dense connective tissue separating the two. The morphology of the two types of cells presented in the same field is admirably shown. The epithelial cells have nuclei that are larger and stain less intensely, and their cytoplasm is much more abundant. From sections near the outer border of the tumor the probable genesis can be traced, the process giving the appearance of metaplasia of myomatous into sarcomatous tissue.

To

HAROLD GUSTAVUS PALMER.

ARTHUR T. JONES.

Statistics.—There are practically no statistics on the frequency of this condition. Text-books give very little or nothing regarding it. Bovee's book mentions cases as having been reported by Klein, Niebergall, Emanuel, Iwanoff, Montgomery, Opitz, Nebesky, and Fry but states that the condition is very rare. Late publications on myoma and sarcoma, on myoma and carcinoma, do not speak of the occurrence of sarcoma and carcinoma in any of the cases although it may be presumed that the

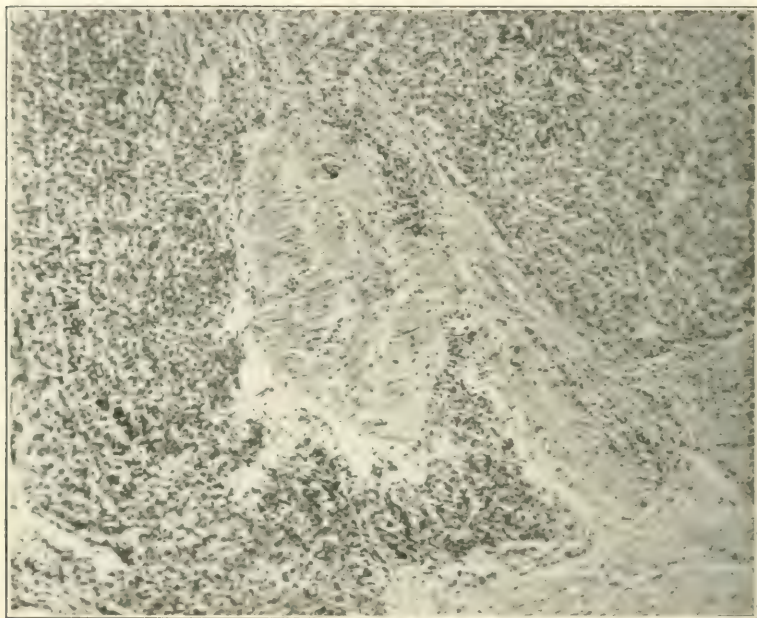


FIG. 6.—Section taken at B (Fig. 1), $\times 100$. Showing general structure. A finger-like process of remaining myomatous tissue is shown.

condition must have been found in some of the cases. Considering the frequency with which we find the association of myoma and carcinoma and of myoma and sarcoma, this latter being generally looked upon as a complication of myoma of the uterus, it would seem that the occurrence of carcinoma and sarcoma in the same uterus must be of greater frequency than we might judge from any writings on the subject.

Tracy's report of 3561 cases of myoma gives 1147 "degeneration and changes in the tumors and uterus." Carcinoma of corpus uteri 63 or 1.7 per cent. Carcinoma of cervix 25 or 1.5 per cent. He speaks of "two or more degenerations in the

same tumor," but does not specify the types of the degenerations. Noble gives a percentage of 2.8 per cent. of carcinoma in a series of 4880 cases of myoma. Cullen says that sarcoma occurs in 2 per cent. Winter in 1743 cases found sarcoma occurring in 4.3 per cent. In the submucous variety it was present in 9 per cent. of Auch's cases. McDonald in a series of 700 cases of myoma gives seven sarcomatous degeneration and twenty-six adenocarcinoma. Martin, of Greifswald, in 205 myomata found

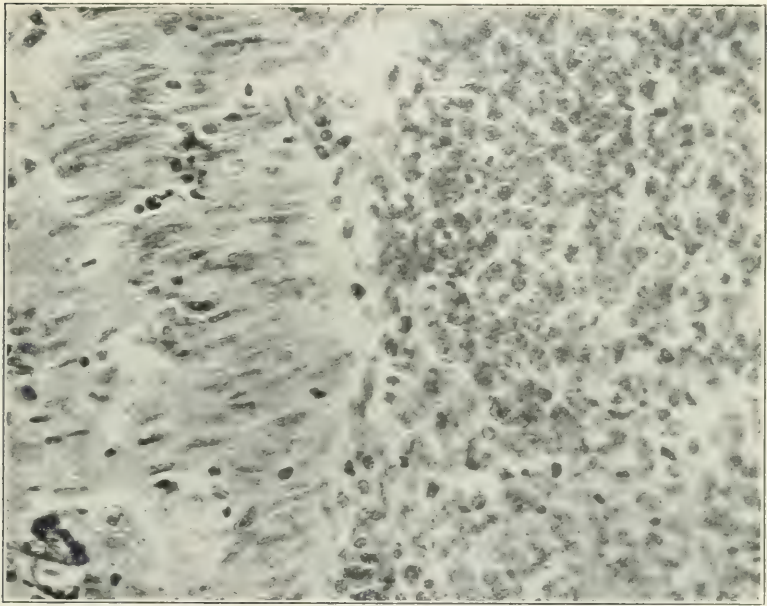


FIG. 7.—Same as figure 6 but $\times 300$. Showing structure of two types of cells present.

sarcomatous degeneration six times. Hauber in Klein's clinic in 138 myoma found sarcoma three times. Although we have plenty of statistics on the presence of carcinoma and myoma and sarcoma and myoma we get practically nothing on the simultaneous occurrence of the two conditions.

Symptoms.—The symptoms are those of carcinoma of the uterus, plus the presence of a watery discharge at times colored with blood and of an offensive odor, shreds and pieces of sarcomatous tissue which macroscopically may be taken for a sloughing and breaking-down fibroid. The uterus is enlarged, soft, and boggy, and irregular in outline from the presence of the sarcoma-

tons mass. If the cervix be not involved in a cancerous mass it may show nothing more than a very patulous os. There may be practically no perimetritis if the disease has not progressed far enough to involve and break down the serous coat of the uterus, the only evidence of extension being in the appendages which may be swollen with enough adhesions about them to simulate very much a case of chronic salpingitis. Or we may have extension of the carcinomatous process and already the involvement of the lymph nodes and pelvic glands. In the later stages we may have extension of both carcinoma and sarcoma with marked perimetritis, the pelvis may be blocked with a hard inflammatory mass and there may be evidences of metastases in other organs. The soft boggy condition of the uterus and the swollen tubes is due to the hematometra or pyometra caused by the sarcomatous mass obstructing the uterine canal and damming back the secretions in the uterine cavity.

Diagnosis.—Diagnosis may be made only upon microscopical findings, although the addition of an at times watery, foul smelling discharge with sloughing-looking material and the presence of a tumor-like mass, having the feeling of a fibroid growth in addition to a soft, enlarged uterus, may arouse our suspicions as to the true pathological condition.

Operation.—The indications for operation are apparent usually when the patient consults the surgeon, for it is not until she has hemorrhages and discharge, is anemic or cachectic with loss of weight, or is suffering from pressure symptoms from the myoma, that she seeks relief. The importance of microscopical examination of every suspected carcinomatous uterus, and of every case of fibroid uterus removed can not be over emphasized for it is only by the microscope that we are enabled to say whether a coexisting myoma is taking on a sarcomatous change or that we can differentiate between a sarcomatous change of a myoma and a primary sarcoma of the uterine wall. Undoubtedly many cases of sarcoma associated with carcinoma have been overlooked upon the presumption that the sarcomatous mass was only a sloughing fibroid. More careful pathological work would bring to light many such cases and add materially to our knowledge of what is considered a rather rare condition.

It would help us on our data regarding the percentage of myomata that undergo degeneration and have a bearing upon the much discussed question "should the presence of myoma be sufficient indication for operation or should we wait for

for symptoms?" At present the consensus of opinion seems to be that we should wait for symptoms before operating, especially if the tumor is of small size and the woman in the child-bearing period of life. From the mere presence of a myoma we should not presume that it will become malignant, but in any case if we are beginning to get symptoms or if from microscopical examination of curettings we find malignancy, or if in spite of repeated curettings the watery discharge continues, complete hysterectomy will be the only treatment.

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 214 BENEFIT STREET.

CHOICE OF DELIVERY IN MODERATELY CONTRACTED PELVES.¹

BY

WILLIAM G. DICE, M. D.,

Toledo, O.

FEW men in general practice take more than passing interest in the question of pelvic deformities because they claim to see so few of them. They think them infrequent because they never look for them or never investigate the cause of many difficult labors and still-births.

German observers have noted from 8 to 24 per cent. of contracted pelves of all kinds and while statistics in America do not show so many as noted abroad, from those obtainable it is fair to conclude that 7 to 8 per cent. of white women have a contracted pelvis. Litzman says that any pelvis with a conjugata vera of 9.5 cm. or less in flat, or 10 cm. or less in generally contracted, should be considered contracted. Williams, in Baltimore, noted that one in fourteen white women and one in six colored women presenting themselves at Johns Hopkins, had a contracted pelvis. Crossen of St. Louis reports 8 per cent. and Davis of Philadelphia reports 25 per cent. in 1224

¹ Presented at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists, held at Syracuse, September 20-22, 1910.

cases, though these latter were based on external measurements only.

Regarding the relative frequency of types of contraction, the generally contracted or justo minor and the simple flat are the most frequent. Snowden in 532 cases of pelvic contraction noted that of the generally contracted, 25 per cent. were in white women and 49 per cent. in colored, while of the simple flat 20 per cent. were in white and 50 per cent. in colored. From the above it is evident that many cases of moderate contraction are never recognized. Even in our large cities, few men ever measure the pelves of their patients, even primiparæ and probably less than one in 500 in the towns and villages. Yet one teacher in a postgraduate school says that these men have their share of difficult forceps cases, versions, craniotomies and vesicovaginal fistulæ—proof positive that they have cases of pelvic contraction. When men doing obstetrics more generally make thorough examinations and take the pelvic measurements before labor, there will be a lower fetal mortality, less maternal morbidity, and fewer women invalidated for years. The pelvimeter is as necessary to the armamentarium of the obstetrician as the stethoscope is to the internist.

With the rarer types of pelvic deformity or with pelves having an internal conjugate of 7 cm. or less, it is not our purpose to deal in this paper, for in such the indications for operation are absolute. One of the problems of obstetrics, however, is the proper management of cases with moderate degrees of pelvic contraction, and cases with normal measurements yet relatively contracted by reason of the child being over large. The real problem is the management of these cases when they have been recognized early, for when the case comes under observation first in labor or perchance exhausted from labor, the choice of procedure is limited. In studying the problem, there are several factors to be considered; the size of the pelvis, the size of the fetal head, the compressibility and malleability of the head, the probable uterine power and nervous energy of the patient, and the duration of pregnancy. Whereas external pelvimetry does not give us accurate data as to the diameter of the inlet, it does give us some idea as to the type of pelvis with which we have to deal and where one finds normal measurements by external pelvimetry, the internal conjugate is not apt to be small, especially if at the same time we find the head engaged at the inlet.

Given a pelvis with external measurements below the average in any respect, it is our duty to make a careful internal examination to determine the diagonal conjugate from which the true conjugate is gotten by deducting 1.5 cm. None of the various instruments devised for getting this measurement have proven practical, as the use of them is too painful for our American women without an anesthetic. The difficulties in the way of determining the relative size of the fetal head are many. If the head four to six weeks before labor is well engaged, we need have little fear of disproportion, though Stone has noted cases where a week or two before labor it had been engaged, but from pregnancy being prolonged it had risen again and from its oversize had given rise to dystocia. Various methods for measuring the fetal head have been proposed. Perret devised an instrument for taking the occipitofrontal diameter through the abdominal wall, deducting 2 cm. to get the exact measurement. Stone proposes an ordinary pelvimeter, subtracting 2 cm. when the measurement is 11 cm. or less and 2.5 when it is over 11 cm. Pinard, after measuring a large number of fetal heads, found the average biparietal diameter to be 8.25 cm. at the thirty-sixth week of pregnancy and 9 cm. at the fortieth, but here one meets with the difficulty of calculating accurately the duration of pregnancy and date of confinement. Bearing on this, in addition to the usual rules based on the date of the last menstruation and quickening, McDonald has recently published the results of his new method of calculating the duration of pregnancy.

"The duration of pregnancy in lunar months is equal to the height of the fundus of the uterus in centimeters divided by 3.5." He finds this very exact after the sixth month. The measurement is taken with the patient lying flat on the back and one end of the tape is placed at the upper border of the symphysis, while the other is held by the thumb into the palm of the hand, the fingers of the upper hand being held at right angles to the uterus. Thirty-five cm. is the usual height of the fundus at full term with a fetus of 3300 gm. and for every centimeter of height above 35, add 200 gm. In cases of moderate degrees of pelvic contraction or of ordinary pelvis yet relatively contracted on account of over large child, the knowledge thus gained by these methods is valuable, enabling one to fix the probable duration of pregnancy and size of the fetus.

The determination of the relative size of the head is probably

best gotten by Müller's method of manual engagement of the head. This is painful for most women, and difficult where the abdominal wall is thick or resistant and to be accurate should be done under an anesthetic. An assistant forcibly pushes the head against the inlet while the examiner by combined external and internal palpation estimates the relative disproportion between the head and pelvis, and the possibility of the head engaging under good pains. If the patient is put in Walcher's position, the maximum enlargement of the inlet is secured. During the last two weeks of pregnancy there is a marked increase in the hardness of the cranial bones and therefore a decrease in the compressibility of the head, which in slight degrees of contraction is an important factor. Some women are ill equipped for labor on account of inherited muscular and nervous weakness. Careful observation of a patient throughout pregnancy will often enable one to predict that she will not bear the strain of labor well. Every year we see cases that require instrumental help on account of inefficient pains or because they go to pieces under much pain. These ill equipped women are mostly among our private patients, women who are seldom sick yet never rugged, lacking in reserve energy.

Having determined at the eighth month that the pelvis of a given patient is moderately contracted one should reexamine her weekly in order to see that it remains possible to engage the head at the inlet, and that when it once stays engaged, it continues so until the advent of labor, especially when pregnancy is prolonged beyond the expected date. As stated above, it is hard to estimate the compressibility and malleability of the fetal head or to predetermine the character of the expulsive forces and it is a matter of record that in many, in fact in the majority of moderately contracted pelves, spontaneous deliveries take place. Voorhies, quoting Sloane Maternity statistics, cites 972 cases of contracted pelves in 10,000 patients, and of these 645 or 66.3 per cent. terminated spontaneously. Edgar noted 70.5 per cent and Williams 71.58 per cent. where spontaneous delivery took place. Williams analyzed his cases and found that where the true conjugate measured 10 to 9 cm. 77.25 per cent. were delivered spontaneously; those from 8.9 to 8 cm., 61.54 per cent.; and those from 7.9 to 7 cm. only 33.3; while of those below 7 cm. none were delivered spontaneously. These statistics are the same, practically, as noted by other observers, so that it is very evident that the farther away

the pelvis is from the normal, the less frequently do we get spontaneous delivery. Furthermore, as between flat pelvis and a generally contracted one, spontaneous delivery is more frequent in the former as all observers hold that 0.5 cm. more must be added to the generally contracted pelvis to make it the equivalent of the flat pelvis.

In private practice, the percentage of spontaneous deliveries is less than in hospital cases, for these patients are more often less well equipped for labor. The real problem before us, then, is the management of approximately 30 per cent. that need help but, before taking up the solution of the problem, a word should be said as to the maternal and fetal mortality of these cases ending spontaneously. Taking the figures of several observers, the mortality in the mothers is about 0.75 per cent. and the fetal mortality increases with the degree of pelvic contraction, averaging from 11 to 13 per cent.

In approaching the solution of the problem of the 30 per cent. not only the maternal and fetal mortality must be considered but the immediate and remote effects on both the mother and the child. The specialist has two classes of cases coming to him for consideration, those that have been under his care and observation throughout pregnancy and in whom, therefore, he has discovered pelvic contraction early, and those seen in consultation, seen for the first time after labor has been in progress, subjected to many examinations or even instrumental efforts, after indifferent asepsis often. For the first, three methods of procedure are available: the induction of premature labor at such time as will ensure a live child, one that will have good chance of survival under proper care; second, a pubiotomy; and third, a Cesarean section. Each method has its advocates and defenders, and no one method can be adopted exclusively. Williams never induces labor in contracted pelvis and Bar and Pinard have also discarded it. Norris believes that in moderate degrees of contraction, 8 to 11 cm., it is indicated but never before the eighth month. It is in these cases of moderate contraction that the percentage of spontaneous deliveries is high and those opposed to induced labor feel that one is justified in giving nature a chance. The mortality in induced labor is practically nil so far as the mother is concerned, but for the child it is not inconsiderable, the per cent. depending on the length of time before term it is induced. Voorheis reports thirty-eight cases, private, with minor or moderate degrees of contraction without a fetal

loss. Norris reports 76.6 per cent. of babies alive after two to ten years in thirty-nine cases of labor induced for contraction. To get such results, as Voorheis aptly says, the pelvis must not be too small nor the child too premature. Labor should not be induced before thirty-sixth week and preferably not before the the thirty-eighth. As to the pelvis, premature labor should not be induced where the internal conjugate is under 8 cm. nor should it be induced in any case where the head cannot be pressed down into the pelvic inlet. Premature children bear instrumental delivery badly, therefore this must be avoided when possible. Voorheis has been especially successful in the handling of premature infants and few have approximated his results, so that the merits of the procedure must be judged by the ultimate fetal mortality, which according to Norris is 24 per cent. Some operators claim a fetal mortality of 50 per cent., but these are based on hospital statistics where the care of the child has not been the best possible. The immediate mortality in induced labor, not earlier than thirty-sixth week, is about 10 per cent.

Pubiotomy has not become popular in this country and from the scanty literature the past two years has not gained in favor greatly abroad. Williams has been its most ardent champion in this country, though Norris and Fry and a few others think it has a place.

Symphysiotomy has passed into disrepute and many think that this new operation has little to commend it and that it, too, will soon be little heard of. Pubiotomy is undertaken chiefly in the interest of the child and the fetal mortality, maternal mortality, and morbidity must determine its justification. Williams in his paper before the American Gynecological Society in May has collected the latest statistics, which are herewith given. Schlafli analyzing 700 cases of pubiotomy, all the cases reported in literature, finds a maternal mortality of 9.18 per cent. and a fetal of 4.37 per cent. after making justifiable corrections; and he concludes that elective pubiotomy should be condemned, to be resorted to only after the test of labor has shown the inability of the patient to deliver herself. Williams believes that the above statistics do not give the operation its due as they are the results of 142 operators, many of whom did the operation but once. In justification of his contention, he cites the following statistics: In 1908, Bumm reported fifty-two pubiotomies with one death; Hoehne, twenty with one death; Schauta, thirty with one death; and in 1909, Reifferscheid,

thirty with one death; Baisch, forty-two with one death and Williams, himself, twenty-five with no deaths, a total of 199 cases with four deaths, or 2 per cent for the mothers and a fetal mortality of about 4 per cent.

Had we a Williams or a Bumm in every large city, the operation might become more popular. As these cases, however, cannot be transported to the few men getting this low mortality but must be handled by men who in the nature of things cannot get many such cases for operation even in a decade, the statistics cited by Schlafli must determine the value of the operation in the hands of men with less material and so less experience. So far as the child is concerned, the mortality is from 4 to 5 per cent. though this does not take into account the possibilities of injuries to the child from forceps.

Other factors to be considered in the operation are the morbidity, the possible injuries to the perineum from forceps and the after results to the mother from cutting the pelvic girdle. Williams reports an abnormal puerperium in 55 per cent. of his cases, though in but one case was there serious illness, and from the statistics of other operators, the operation seems to predispose to infection. The dangers to the mother as noted by various observers are as follows: hemorrhage from injuries of the vesical plexus, deep vaginal tears, injuries to the bladder, incontinence of urine, hematoma of the labia, phlebitis, and hernia. As for the remote effects, only one of Williams's patients had difficulty in walking after a period of nine months, and the other twenty-four were able to walk and work as usual after a few months. Definite motility, showing fibrous union was noted in two-thirds of the cases after some months. As would be expected, the lighter patients had less immediate difficulty in walking. As to the permanency of the pelvic enlargement, about 50 per cent. showed permanent increase of from 1 to 2.5 cm. between the tuberosities of the ischia. Even Williams does not consider the operation an ideal surgical procedure, but it is a valuable adjunct in the treatment of borderline cases of contraction, in that the test of labor can be pushed and then the patient operated on with little risk to the mother and with the prospect of saving 90 per cent. of the babies. Save in those cases where the saw is placed before applying forceps, Williams believes that it should be considered a primary operation and not be resorted to after ineffectual attempts to deliver otherwise. In definitely infected cases, the mortality

varies from 3 to 17 per cent. and as the child in such cases is probably not in the best condition, the risk to the mother is too great for the operation, and if the child cannot be delivered by forceps one is justified in doing a craniotomy.

The third possible solution of our problem is through a Cesarean section, and the period at which it is done determines whether it is a primary, secondary, or late section. When the operation is done before term, it is considered elective or primary, secondary when the labor has begun, and late when patient has labored long but in vain. Primary section or early secondary gives the lowest mortality and it increases with the duration of labor. Reynolds reporting 289 cases collected found a mortality of 1.2 per cent in eighty-two primary sections; 4 per cent. in 158 secondary sections and a mortality of 12 per cent. in forty-nine late cases. Without considering any classification, Voorheis cites 172 sections by eight operators with a mortality of 1.2 per cent. while a series of 508 cases by twenty-seven operators showed a mortality of 6.49 per cent.; but if moribund and those definitely infected before labor are excluded, the mortality is reduced to 3 to 4 per cent., while the fetal mortality is practically nil.

The dangers of Cesarian section are those common to any laparotomy in addition to such as might arise remotely in the event of future pregnancy from the presence of a thin scar in uterine wall. Whereas, a few cases of rupture of uterus have followed at subsequent labors, a much larger percentage of patients have gone through one or more later labors or been subjected to other sections without accident. Sepsis, adhesions, pyemia, phlegmasia, abscess of uterine wall, ileus, are all dependent for the most part on the stage of labor at which the operation is done, and the possibility of infection before operation. Cesarean section gives a live baby, the *sine qua non* of every successful obstetrical operation for contracted pelvis. Where the infant is dead or dying, Cesarean section is contraindicated for, as in pubiotomy, the maternal risk is too great. Fry well says, "the great needs of modern obstetric surgery are to see cases early, recognize the possible necessity for Cesarean section, and to conduct the labor accordingly." The majority of men in general practice do not get their patients into the surgeon's hands until interference must be classed as late, when the dangers to the mother are increased tenfold. Careful examination of our patients before labor enables us to determine whether the head

will engage, and if at the beginning of labor it can still be engaged it may be possible to have a spontaneous delivery; but where the head cannot under chloroform be made to enter the inlet, a Cesarian section should be done without delay.

As all operative obstetrical work looks to the saving of the child, our study would not be complete without reference to high forceps and version in contracted pelves, and bearing on this Voorheis states that at the Sloane Maternity the fetal mortality for high forceps was 43.2 per cent. and the maternal was 1.8 per cent.; while in version, the fetal was 49.5 per cent. and the maternal 2.1 per cent. In view of these statistics, one does not wonder at the decline of these procedures especially when in addition to the above, cervical lacerations occurred in 40 per cent. and extensive perineal tears in 36 per cent.

CONCLUSIONS.

Every primipara and every multipara with a history of difficult labor or still-births, should be carefully examined six weeks before term, to determine the size of pelvis and of fetal head and if disproportion is feared weekly examinations should be made thereafter, to see that the head can still be engaged. In doubtful cases one should not hesitate to resort to an anesthetic to make certain of disproportion. In multiparæ with above history, labor should be induced at the latest possible period, not earlier than the thirty-sixth week. If the disproportion is such that labor induced at this period does not give promise of delivery without the use of forceps, it would be better to wait until term, then do a primary or early secondary Cesarean section.

Primiparæ with moderate contraction should be given the test of labor, provided the head can be engaged by Muller's method.

The test of labor should be conducted with rigid aseptic technic, such that the best interests of the mother and child will be conserved in case operative interference is finally required. If after a few hours of good pains, the head does not mold or advance, operative assistance is indicated.

Unless a skilled operator is available and if delivery will require a difficult forceps operation in addition, pubiotomy is contraindicated. In a small percentage of cases, pubiotomy, in the hands of skilled men, will be chosen in cases of slight disproportion between the pelvis and fetal head, but it will tend to be done less and less. When in doubt as to the best procedure, resort

to Cesarean section. Patients with relatively contracted pelves, on account of over large child from prolonged pregnancy, will require Cesarean section unless disproportion is recognized early enough to induce labor at term. In contracted pelves, high forceps and version are indicated as a last resort in cases of moderate contraction, where pubiotomy and Cesarean section are contraindicated. Craniotomy is never indicated save on a dead or dying child, in order to save the mother.

Appended are brief histories of two cases leading writer to the above study of contracted pelves.

Mrs. V., aged thirty-nine years, short and slight in build, gave history of two pregnancies, seven and five years previously, both children weighing nine pounds, and delivered with instruments after much difficulty. In later months of last pregnancy relaxed abdomen became pendulous, and binder could not be worn with any comfort. Labor began at 5 A.M. August 10, case seen at 7 A.M. The head had not engaged and could not be made to engage. Pelvic measurements, between spines, 25 cm.; crests, 27 cm.; external conjugate, 19 cm.; and internal conjugate estimated, 10 cm. Patient was transferred to hospital. Operation by Dr. C. N. Smith. Cesarean section performed, patient made uninterrupted recovery. Child weighed nine pounds.

Mrs. D., age thirty-six, a primipara, 5 feet four inches, weight 180 to 190. During last week of pregnancy had some albuminuria, which under rest and diet improved but did not entirely disappear. External pelvic measurements were valueless on account of excessive weight. Head very slightly engaged a week before labor. Irregular weak pains on February 7 and 8, such that they did not tire the patient especially nor dilate the cervix.

Thorough examination under anesthetic morning of the ninth, shows cervix dilated three fingers, biparietal not such as to descend, and head very hard and noncompressible. Transferred to hospital. Cesarean section done. Child weighed eight pounds fourteen ounces. Mother at no time had temperature over 101.5 but was from first much distended and at no time was satisfactory bowel movement secured. Obstinate paresis of intestine persisted and death came at end of fifth day.

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CONSERVATIVE SURGERY OF THE UTERINE APPENDAGES.*

BY

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CONSERVATISM in surgery is ideal. It is the end for which all strive; and differences in degrees of its accomplishment are only due to differences in conception of its meaning. In using the term we mean not only conservation of tissue and of tissue structure as it pertains to an organ and its neighbors, but conservation of organic function as well; and forgetting this we become, not surgeons, but mere mechanics, falling far short of the best good for the patient.

To the removal of an organ entire, if it is diseased, the economy at large will be submissive and accomodate itself to the loss; but a perversion of function invites erratic processes, and will create a pathology which may be both beyond remedy and of very great danger. Coming before an audience of masters, of pathfinders, I feel very humble indeed; my chances of investigation being meager in proportion to my want of light; and yet, I believe that there is something in my theme, and it is the sincerity of motive alone that gives me courage.

All of the functions of the procreative organs of woman are accomplished in cycles, of turgescence and of retrocession; at periodic intervals of comparative regularity, the currents come and go. These currents mean not only an influx of blood to the pelvis and its organs, but an awakening of nerve fiber and of tissue change as well. The delicate and beautiful structure of the ovaries and Fallopian tubes are essential to the proper fulfillment of their normal functions; and a careful study and understanding of them in minute detail is also essential to an avoidance of hurt, rather than help, to their vital mechanism.

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Pardon me for going back for just a moment to our student days and giving a thought to physiology, the most beautiful as well as the most practical branch of our science, because it gives us all things with the glow of health upon them. Let us get a mental picture of the virgin reproductive organs just at maturity, without sequelæ of exanthemata and before the access of marital relation, with all of its possibilities, has distorted their perfection of arrangement. A pear-shaped uterus, with a normal inclination just a little forward, swinging between the bladder and the rectum on its vaginal and ligamentous supports, and forming thus the body of the "bat" whose outspread wings, on either side, are of so much interest because of the beautiful part they play in the process of procreation. Nestled within the broad ligaments, which contribute to the make-up of the outspread wing, the ovary lies, quiescent and expectant, awaiting the responsive clasp of the delicate fimbriæ, so beautifully arranged at each terminus of the Fallopian tubes, which form the inviting and receptive channels both of ingress and of egress between the uterus and the abdominal and pelvic cavities. Now let us picture for a moment these organs just matured and free from all disease or other injury, and their functions as we conceive them.

The uterus and its position are such as to invite travel, both in and out, along the Fallopian tubes, and the lining membrane such as to encourage the migrating spermatozoa in search of the factor essential to vital development. This factor, furnished by the ovaries at periodic intervals, but, I believe, most freely just after the menstrual epoch, finds its way into the uterus by way of the Fallopian tube, into whose channel it is taken by the clasp of its fimbria. In the normal woman the tubes are always patulous, the cilia of their lining membrane waving to and fro and favoring the normal currents, while their terminal fimbriæ, when she stands erect, and they are not engaged in their spasmodic clasp of the ovary, *float free, like a fish's fins in water*. How delicately beautiful and how delicately sensitive is this mechanism, and how very easy it is of perversion, through both pathologic and surgical agencies; and in doing repair to these structures, the question is not "will the patient withstand the procedure?" but "will normal conditions be restored, and normal functions retained?"

This picture is of normal conditions, with the normal and recurrent turgescence and retrocession of the menstrual wave,

and at this epoch and also during the interval we must picture the ovary quietly maturing and throwing off its product, to be caught within the clasp of their outspread fimbriæ and started on its journey through the tube, to either find the vital element essential to its life and full development or, failing, to be lost. Before maturity and before the marital relations are begun, the exanthemata play the greatest part in distorting these organs and in marring the physiologic picture we have painted. By their inflammatory action the tubes may become congested and their lumen either partially or wholly obliterated, while an agglutinated fimbria, instead of *floating free*, will hold within its welded grasp an enlarged, or cystic, and very tender ovary. These conditions seldom clear up entirely and may last, perhaps, throughout a lifetime.

Of greater importance, because of their more destructive tendency, are the infections from without, which come after marital relations have been established; and chief among these, I believe, are gonorrhea and the wound infections of the puerperium. To dwell at length upon, or even to enumerate in full, the destructive ravages of these infections, would only be to make my subject tiresome; for they are classic and with them you are all familiar. For instance, and notably, the gonorrheal pus tube, with destruction of its fimbriæ and resultant clubbed extremity, accompanying which there may be agglutination of all surrounding structures with, perhaps, an abscessed ovary as well. Of equal danger and of equally destructive tendency, are the infections gaining access through the traumatism of a normal childbirth, or the traumatism of either a criminal or a simple, incomplete abortion. Such accidents often leave the pelvis blocked with exudate, which is very slow in clearing up sometimes, and yet, throughout its progress, we cannot determine a localized pus collection. Finally, it may clear up, as has been witnessed in my own experience many times, short of local pus collection, but leaving in its wake, in a very large majority of cases, permanent injury to the functional structure of tubes and ovaries.

Now, the question is not, can we open these women and do conservative repair to these delicate organs? but, will this repair lessen or increase their dangers for the future? To-day we know that the small cystic ovary is a very common occurrence, and we do not believe that they should all be removed. If clean, with a free fimbria, and also free from infection, puncture

of such cysts, or even the removal of small sections of the ovary, are conservative and helpful; this does not interfere with function, but when function is abolished, as it must be with the club-shaped tube bereft of its fimbriæ, we should not lose the mental picture that should always be before us, of the physiologic functions of the structures with which we deal; and remember that such structures, so bereft, become only foreign bodies, and may be guilty of most erratic doings. In creating scar tissue anywhere, without just cause, with its possibilities of reflex scar-tissue neuroses, we substitute an organic for a functional disturbance, and the inherent expulsive function of the procreative organs of women resents scar tissue and favors resultant scar tissue neuroses. Furthermore, leaving such a tube so bereft of fimbriæ and patulous is a very inviting and dangerous thing indeed. However much the patient may desire a conservative operation, with a possibility of future conception, she does not care for one that must only be fraught with danger, and may be fatal.

Thus, a patulous tube, perhaps with a distal amputation and bereft of fimbriæ, left within the pelvis, can only be a menace to its owner. The ovary, however, seared by the conflagration through which it has passed, continues to produce an ovum now and then, which is thrown off to seek and never find its proper route of travel. The tube, with its delicate arrangement of fimbriæ and ciliæ so adapted as to constitute this route, is so perverted that it can only act as carrier from without, receiving from the uterus the male product and depositing it within the pelvic cavity, where it may be lost or where it may meet its wandering mate, and do much havoc by the meeting.

Such cases, I firmly believe, are far better let alone than incompletely done. In the one case, without infection from pus, we have only the foreign body, to the accommodation of which there will be eventually some tolerance. In the other we have not only the scar tissue but the doubly distorted organ, with a perversion of function that invites a fatal accident. Therefore, in perfecting our technical mechanics, let us not forget the very delicate and sensitive vital mechanism with which we deal, and let us find in the total removal of a permanently crippled structure not only the safest future for the patient, but also the ultimatum of ideal conservatism.

FATAL MERCURIAL POISONING DUE TO VAGINAL
INTRODUCTION OF BICHLORIDE TABLETS.
REPORT OF THREE CASES.*

BY

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CASES such as mentioned in the title of this paper have been reported, but it has not been my experience to observe any, other than casual reports merely relating the circumstances, without findings by autopsy. The cases in question came under my observation through my being called by the Coroner of Allegheny County, Pa, to hold autopsy for his information, to be used in his investigation of the causes of death.

In each case the deceased was told by someone to "use" antiseptic tablets, without any qualification of the term, and from the disastrous results entailed I would think the profession could draw a useful conclusion to the effect of being very careful about instructing patients in the use of this very serviceable but extremely toxic chemical.

CASE I.—Miss K., a young single woman, after an indiscretion, became apprehensive and appealed to her companion for a means to prevent pregnancy. He professed ignorance, but said he would inquire of the druggist. Upon said inquiry, the druggist sold him six 7.3 grain bichlorid tablets and told him to "use" them. This was done to the extent of inserting the tablets in the vagina. The burning pain that ensued caused her to try to remove the tablet, but she could not do it, on account of the reflex muscular spasm.

In the course of about thirty-five minutes a physician was secured, who gave intravaginal douches of warm water, and morphin hypodermically for the relief of pain. The physician who did this was positive in his statement that no remnants of the tablet could be found in spite of careful observation. The patient was removed to a hospital the same evening and in the course of a few hours developed intense symptoms of mercurial poisoning, salivation, enterocolitis, muscular tremor, suppression of urine with consequent uremia and collapse, dying four days later.

FINDINGS AT AUTOPSY.

1. An intense, necrotic, exfoliative enterocolitis most intense in the rectum where it involved both mucous and muscular

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coats, which were so degenerated that they could be brushed away from the peritoneal coat with a slight scraping of the finger. This process gradually became less severe as the examination continued upward, but nevertheless was distinctly present as high as the duodenum.

2. A necrotic degeneration of the mucous and muscular walls of the vagina and vaginal portion of the cervix. The broad ligaments, Fallopian tubes, and ovaries were necrotic, but upon section of the uterus the mucous lining of the uterine cavity above the internal os was found to be normal in appearance and no perceptible change could be seen in uterine body structure, indicating, I would say, that the chemical irritant had been carried to the uterine adnexa and farther by the lymphatics.

3. No evidence of peritonitis.

4. The pelvic peritoneum posteriorly was dissected away from pelvic wall and distended by a collection of clear serum of considerable quantity, about 10 ounces.

5. The left kidney was the seat of a cystic degeneration and distended at its lower pole by a collection of cloudy serum about 1 ounce in quantity. The substance of both kidneys showed a marked fatty degeneration.

6. A well marked myocardial fatty degeneration most noticeable along course of nutrient arteries.

7. A parenchymatous degeneration of the liver and spleen, evidenced by enlargement, softening, and pale coloration.

CASE II.—A young married woman was told by a female friend to "use" antiseptic tablets for prevention of conception and followed this advice in the same manner as was done in preceding case. This case was taken to a hospital and treated by use of continuous enteroclysis, under which treatment she lived two weeks and for a time seemed to be on a fair way to recovery, when she went into collapse and died at the end of two weeks.

The autopsy findings in this case coincided in the main with those of the preceding one, with the exceptions that a perforation in the lower third of the descending colon had produced a general peritonitis, and a calcareous deposit along the course of the renal tubes could be clearly demonstrated.

CASE III.—A young married woman was given the same advice as was given in Case II and followed it out in the same manner. Her physician arrived within twenty minutes and immediately gave her intravaginal douches of hot water and as soon as he could procure it used hot milk in the same manner. Following this she was placed upon continuous enteroclysis and apparently did well for three days, when she developed tremors and later on paralysis and died at the expiration of a week's time.

The autopsy findings in this case differed from the former ones only in the fact of showing marked evidence of passive hemorrhage in the most dependent portions of peritoneal cavity, and a large amount of bloody serous exudate beneath the brain membranes.

CONCLUSIONS.

I would conclude from the above findings that absorption in these cases takes place through lymphatics and is exceedingly rapid, as shown by the fact that within twenty minutes a lethal dose can be absorbed.

In each case the patient said that she tried to remove the tablet with her fingers but could not do it, because I would think of a reflex muscular spasm and the extreme pain with consequent nervous shock.

It would appear unless the offending tablet can be removed within a very few minutes that the person suffering from such an accident has a small chance for recovery, because of the far-reaching effects of the poison as shown by the autopsy findings in these cases.

1105 PARK BUILDING.

SOME CLINICAL CONSIDERATIONS OF PELVIC AND PERITONEAL TUBERCULOSIS.¹

BY

CURTIS SMILEY FOSTER, A. B., M. D.,
Pittsburg, Pa.

To those of us who have witnessed the renaissance of pulmonary tuberculosis it is apparent that tuberculosis of the genitalia has received but little attention if one considers the ubiquity of tuberculosis in general. Some idea of the frequency can be gained from the following statistics: in 6,000 autopsies at Parma tuberculosis was the cause of death in 1,360; 172 of these were females with genital involvement (12.6 per cent.). Frerichs gives the per cent. of primary tuberculosis of the female genitals at 6 per cent.; Mosler, 19.5 per cent.; Spaeth, 24.5 per cent. According to Still, 9.5 per cent. of tuberculous girls under twelve years of age have genital tuberculosis. Out of 1,600 pieces of tissue from Martin's Clinic in Griefswald which were examined for tubercle bacilli, they were found in twenty-four.

Genital tuberculosis may be either primary or secondary. By the former we understand that the focus in the genital apparatus is the only one in the body. In favor of primary genital tuberculosis are the facts that: *a.* otherwise strong, healthy people have primary manifestations in the genitalia.

¹Presented at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists, held at Syracuse, September, 20-22, 1910.

b. After removal of the local focus, patients remain well for years. c. Children, apparently healthy otherwise, have primary tuberculosis manifested in the genitals.

The primary is much less frequent than the secondary. Some authors absolutely deny the possibility of this form; others consider it very rare. The secondary form is frequent in phthisis. Thus Stolper in thirty-four autopsies dying from pulmonary tuberculosis found tuberculous lesions of the pelvic organs in seven, or 20.5 per cent. We owe to Hegar (Murphy) the two forms of genital tuberculosis, an ascending which is generally primary, and a descending which is generally secondary. For the production of the primary, the two following possibilities must be taken into account (Hegar):

1. Penetration of germs from the outside directly to the mucosa of the vagina, uterus, tubes, and finally the peritoneum and ovary.
2. Penetration of germs through minute breaches of continuity in the general tract, into the lymphatics, thence into the Fallopian tubes directly against the lymph current or by way of the pelvic peritoneum into the tubes at the fimbria.

The sources of infection in general may be classified as by the blood, lymphatics, contiguity of tissue, and continuity of surface. The order of frequency with which the organs are involved is: tubes, uterus, ovaries, vagina, and vulva. So rare are the cases of tuberculosis of vagina, vulva, and ovaries, and they have only been mentioned in this paper as illustrating the modes of infection, that a consideration of genital tuberculosis draws our attention almost entirely to a study of tubes, uterus, and peritoneum.

Tuberculosis of the uterus is most frequent after that of the tubes. Merletti in 172 cases of genital tuberculosis found well marked lesions of the uterus in seventy-five. Stolper in thirty-four autopsies on tuberculous women found three cases, and Wolff in seventeen similar cases found three also. Cullen in eighteen months diagnosticated six cases from the clinic and in Marten's clinic where the mucosa is examined as a matter of routine, in 1,500 cases tuberculosis was found twenty-four times. In practically all reported cases the lesion in the uterus is secondary to one in the tubes, hence the portion of the organ about the orifices of the latter is most often involved.

The miliary form has been less frequently met than the others, but no doubt it has often been overlooked on account of the inconspicuous character of the lesions. Small tubercles are scattered over the mucosa; later on ulcers make their appearance

and the mucosa may be partly or completely destroyed. In severe cases the mucosa is wanting and its place is taken by granulation tissue. The muscular layer often remains intact for a long time, but in extreme cases it also is partly absorbed, leaving merely a fibrous bag containing thick pus and caseous material.

Symptoms.—The symptoms show nothing striking or pathognomonic, but may be those of any chronic inflammatory trouble of the endometrium. Menstruation may be regular, suppressed or profuse. Much stress has been laid on amenorrhea as a strongly suggestive symptom. This has been contrary to what I have found in four cases operated on in the last year. In one case, the trouble dating from birth of child eighteen months previously, her menstruation occurred every three weeks, lasting from eight to ten days. Another had uterine hemorrhage for three weeks before coming to the hospital, while the other two have increased menstruation both in time and amount of flow. The profuse and intractable leukorrhea of both extremities of life is very frequently due to tuberculosis of the uterine fundus. The persistent and profuse leukorrhea of girls from ten to fourteen years of age occurring rather suddenly and resisting local vaginal treatment should always be suspected of tubercular origin, and careful examination of the discharge should be instituted. If these are negative, curetments should be made to determine the presence of bacilli.

At or shortly after the menopause profuse, ichorous, irritating leukorrhea, without hemorrhages, should be considered as indicative of tuberculosis of the fundus, and careful microscopic examination of the secretions and scrapings should be made. The treatment of this condition is unsatisfactory on account of difficulties in the way of early diagnosis and lack of unanimity among operators as to the proper method of pursuit. There are those who contend that after the first curetment from which the diagnosis was made, no other operative interference was necessary; while others insist that the only hope for the patient lies in total extirpation.

I quote from Williams who sums up the situation very concisely:

“ If we deal with a tuberculous endometritis, we should first satisfy ourselves that the tubes are intact. Any apparent inflammatory disease of the tubes, along with tuberculosis of the uterus, would indicate that they are likewise involved. If the process be limited to the uterus, we should

curet at once, and if after this there is the slightest occurrence of the affection, there should be no question as to the propriety of vaginal extirpation of the uterus. In all such cases it is best to remove the appendages with the uterus, as it is impossible to tell whether they are perfectly healthy or not, especially in the light of great frequency of unsuspected tuberculosis of the tubes."

TUBERCULOSIS OF TUBES.

This is by far the most frequent variety of pelvic tuberculosis and is usually bilateral. As Hegar pointed out some years ago, the tubes are predisposed to tuberculosis by their spiral form and pleated mucosa which favors stagnation of secretions. A preliminary catarrh seems to enhance the chances of infection. The sources of infection are numerous from the peritoneum through the blood or lymph vessels and from outside the body. The normal constriction of the tube about $1/2$ an inch from the uterus favors the arrest of bacilli at this point. Clinically this is the most frequent area involved and the pathological changes indicate that it is the primary focus in the tube. It is at this same point that the gonococcus infection is arrested and retained sufficiently long to destroy the mucosa and produce the stricture which is the most prominent etiological factor in gonorrheal pyosalpinx.

As the symptoms of uterine tuberculosis are practically those of endometritis, so the symptoms of tubal tuberculosis are in general those of salpingitis, to which are frequently added those of pelvic peritonitis. The pain is periodical, localized, though at times diffused, and is usually the reason for which advice is sought. Menstrual disturbances are, as a rule, not noticeable. In cases of simple tuberculous infections of the tubes the fimbriated end is not, as a rule, closed, but there is a marked periodicity of the attacks, accompanied by all the manifestations of an acute infection of the pelvic peritoneum—namely, soreness, pain, elevation of temperature, great sensitiveness on examination, and boggy feeling in the culdesac. It was Murphy who first pointed out that these attacks were due to the expulsion of tubercular debris from the tubes into the peritoneum. In a great majority of his cases of tubercular peritonitis with ascites in women, he found that the Fallopian tube on one or both sides could usually be found open, there being an eversion of the fimbria with thickening of tube and especially of the mucous membrane.

A discussion of the treatment of tubercular salpingitis be-

comes superfluous without a consideration of tubercular peritonitis, which, from an etiological standpoint bears a very close relation. While the roads of access of the bacilli to the peritoneal tract are many—for example, through the intestinal blood current, the lymph channels, especially from the mesenteric glands and the genitourinary tract—as a general rule, it may be stated that in males the most common source of the infection is the intestine, next the genito-urinary tract; and in females, the genital tract, especially the tubes.

Mayo states that at the operating table he found about three females to one male with tubercular peritonitis. Osler gives the ratio 2 to 1, while König out of 131 cases reports 120 in women, 11 in men. On the other hand, Williams asserts that infection of the tubes is far more frequently the result than the cause of peritoneal involvement. Against any theories, whether this infection be ascending or descending, is the following quotation from Mayo:

“Having under observation a small number of patients in whom simple laparotomy had failed in the permanent cure of tubercular peritonitis, we began to do a radical operation, performing hysterectomy with removal of tubes and ovaries. The condition of the uterus and ovaries on examination did not justify so mutilating a procedure, the tubes showed unmistakable evidence that they alone were the source of infection. It became clear that in tuberculous of the peritoneum, in a very large majority of women, a lupus of the mucous membrane of the tube was a source of infection of the peritoneum. The peritoneal involvement is greatest in extent near the seat of local infection. This has been generally noted and heretofore ascribed to gravity. It is more likely due to the proximity to the seat of infection.”

The treatment of tubercular peritonitis covers a large page both in medical and surgical history. Borchgrevick was one of the first to insist very strongly on the medical treatment, even to the point of condemning all surgical procedures. Fenger, in a most exhaustive study of the subject, sustained the opinion of Borchgrevick. So strong was he in his conviction that he regarded it in its more favorable form, the ascitic, as nonsurgical.

Against these conservative opinions is the overwhelming evidence of numerous operators, and the value of operative intervention can no longer be said to be in question. In discussing the results of treatment a distinct classification of the pathological conditions must be borne in mind and the following

propositions must be considered: *a.* To remove or shut off the source of supply to the peritoneum of new tubercular material. *b.* To remove the products of the infective process from the peritoneum. *c.* To increase the tissue proliferation for the encapsulation of foci already present. *d.* To avoid mixed infection.

The three distinct types of the disease have been classified.

The Disseminated, Non-confluent Serous Variety.—In a great majority of cases, this variety is associated or due to tuberculosis of the tube. The fimbriated end of the tube is open and is constantly ejecting tubercular debris into the peritoneum. Medical treatment in these cases gives poor results and abdominal section *per se*, without removal of the tubes or induction of an inflammatory process, which would exclude the tubes, is as futile as medical treatment. The prime indication in this class of cases is to remove the tube beyond the focus of inflammation. Murphy believes that it is important to have an inflammatory reaction following laparotomy if the case is to make a satisfactory recovery. This postsection reaction, he believes, is due to a fermentation of the secretion remaining in the abdomen causing an inflammation, irritation, and reaction in the tissues resulting in tissue proliferation which overwhelms and encapsulates the tubercular foci on the surface of the peritoneum. If the focus of supply to the peritoneum be a mesenteric gland or a periappendicular tubercle, the removal of the focus is indicated the same as removal of a tube.

Nodular.—In the nodular or ulcerative variety, a more or less diffuse tubercular peritonitis, usually of tubal origin but due to glandular infection more frequently than the ascitic variety, presents a healing of the peritoneum except in circumscribed areas, as at the ends of the tubes, between adherent intestinal coils and between the omentum and parietes. In these cases the process destroys the peritoneum, the intestinal wall or the tube, and produces a considerable sized caseous mass. These masses are usually surrounded by connective-tissue barriers and there is commonly a considerable quantity of fluid in the peritoneal cavity. In these cases, if the nodes are free and the peritoneum practically free from adhesions, *good results* are obtained from operative interference. The tubes should be removed, if possible, without any bowel laceration. The masses of tubercular infiltration should not be removed and great care should be exercised not to injure the intestinal wall and produce

a fecal fistula. If the process is confined to single or adjacent coils of the bowel, the coil should be resected, otherwise the affected area should be excluded and allowed to remain. It is questionable whether surgery gives better results than medical in these cases, but it clears up the diagnosis and adds nothing to the danger.

Adhesive, Fibroplastic, Cystic.—The classification of cases occurring as adhesive, fibroplastic, or cystic with obliteration of the cavity is explanatory of the pathologic changes. It signifies that the process is severe in that it destroys the epithelial layer of the peritoneum and that the membrane has reacted to reparative cicatrization. In the milder types of this variety the peritoneal surface is gummed together with a mucilaginous substance, which, when separated, does not leave an abraded surface. If the process has been destructive the union is organized connective tissue and when separation takes place leaves an abraded, oozing surface. Circumscribed cysts form between the coils of the intestines and in the pelvis, which are sometimes mistaken for ovarian or broad ligament cysts.

Two of the four cases heretofore mentioned were of this type. When the abdomen was opened, and with considerable difficulty, as entrance to the peritoneal cavity could only be gained high at the umbilicus, a diaphragm was found stretched across the abdomen. Below this diaphragm were uterus, tubes, and ovaries. Pushing up of the diaphragm threw the bowels into the upper abdominal cavity. Puncture and opening of this diaphragm showed the bowels covered with a gummy exudate and considerable fluid. The subsequent history of these cases has been bad. One died from mixed infection and the other still lives without any improvement. Surgery avails nothing in cases of this type, but in cases where the infecting focus can be located and removed the prognosis is much better under surgical than medical treatment.

CORRESPONDENCE.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS.
DEAR DOCTOR:

The accompanying illustration is that of a placenta in which is embedded a hard rubber catheter. The catheter was introduced in the seventh month of gestation. I saw the patient several days after its introduction at which time she had a pulse of 122, a temperature of 101° F. and severe pain in the lower abdomen. There was a profuse odorous discharge from the vagina. No signs of fetal life could be elicited.

A Barnes bag was introduced and a macerated fetus expressed with difficulty. The patient said the catheter had been introduced by a physician. She assured me that it had not come away, which fact was verified by the finding of the catheter in the placental tissue. Recovery followed.

PALMER FINDLEY, M. D.

3602 LINCOLN BOULEVARD
OMAHA, NEBRASKA.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

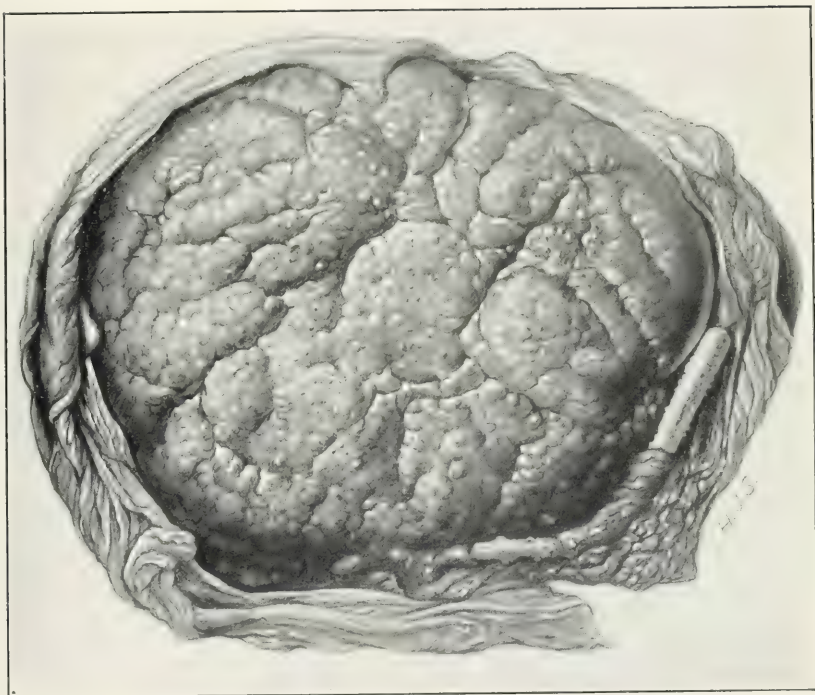
Meeting of December 15, 1910.

The President, JOHN A. WYETH, M. D. in the Chair.

This meeting was held under the auspices of the Section on Obstetrics and Gynecology.

MEMORIAL ADDRESS ON THE LATE DR. ROBERT KOCH, HONORARY
MEMBER OF THE ACADEMY.

DR. JOHN A. WYETH said that no brief memorial could do justice to the career of this great scientist and he could give no more than a bare epitome of the life and labors of a great unselfish worker for the welfare of mankind, of one who for many of his most laborious and fruitful years was an honorary fellow of New York Academy of Medicine. Dr. Koch was born in 1843; he was graduated in medicine at Goettingen in 1866. He served as interne in the hospitals of Hamburg. In 1876 he announced the discovery of the spores of the anthrax bacillus. In 1880, in connection with Gaffky, he announced the discovery of the typhus bacillus and, in 1882, the discovery of the bacillus of tuberculosis.



HARD RUBBER CATHETER EMBEDDED IN PLACENTA.—FINDLEY.



In 1883 his study of Asiatic cholera resulted in the discovery of the bacillus of that disease. In 1885 he was elected Professor of Hygiene at the University of Berlin and Director of the Hygienic Institute of which he was the founder. In 1890 he became the head of the Imperial Institute for Infectious Diseases; in that same year he discovered tuberculin. In 1897 he discovered an effective immunization against rinderpest. In 1901 Dr. Koch made an address, emphasizing the difference in the morphology of the bacillus of human and bovine tuberculosis. In 1902 he inaugurated a systematic and successful campaign against typhus in German East Africa. In 1905 he was awarded the Nobel prize. Dr. Koch died on May 27, 1910.

DR. S. ADOLPHUS KNOPF said that on November 26 Mrs. Koch wrote him: "I wish there was time so that I could be permitted to have the portrait of my late husband made here so that I could take it with me when I shall visit America some time after Christmas and present it to the Academy. I cannot tell you how deeply I appreciate that there will be in New York about the same time as in Berlin a memorial celebration in honor of my beloved husband." In presenting this portrait of Dr. Robert Koch to the New York Academy of Medicine, Dr. Knopf said that against Dr. Koch's wishes the discovery of tuberculin was prematurely announced as a specific in tuberculosis. The result of the use of so powerful a product in the hands of the inexperienced and its indiscriminate use in all cases was followed by the inevitable results. However, his claim that tuberculin had a diagnostic and therapeutic value in certain cases had been verified and substantiated since. Dr. Koch firmly believed in the municipal control of this disease, tuberculosis. He believed in the popular education of the masses. In writing to Dr. Knopf a few months before his death, Dr. Koch paid a graceful compliment to the American people. He said: "Popular works on tuberculosis are destined to play an important part in the enlightenment of the people and the American people seem to me particularly susceptible to such education."

The master honored Dr. Knopf in his letter by presenting him with his last photograph, signed by himself and dated February 9, 1910. The portrait presented was an enlarged reproduction of the photograph in Dr. Knopf's possession.

Dr. Robert Koch himself looked upon his great achievements as nothing extraordinary. He said: "I have done nothing else than what you are doing every day; I have worked as hard as I could and have fulfilled my duty and obligations. If the success really was greater than is usually the case, the reason for it is to be found in the circumstances that I came in my wanderings through the medical field upon regions where the gold was still lying by the wayside. Fortune is necessary to be able to distinguish gold from the base metals, but that is no great merit."

Dr. Knopf asked, in closing, that the portrait, which should henceforth grace the walls of their beloved Academy, this likeness

of a prince of science, a teacher of teachers, one of the greatest physicians of his time, should remind present and future academicians of Koch's motto in life: "Nunquam otiosus" (be never idle). Let it be to them an inspiration, an incentive, and a reminder of the fact that though much had been done, there was still more to do.

THE CLINICAL PECULIARITIES OF GONORRHEA IN
CHILD-BEARING WOMEN.

DR. BARTON COOKE HIRST of Philadelphia said that pregnancy, parturition, and the puerperium influenced the course of gonorrhea in women, and gave it peculiar characteristics. These peculiarities might be enumerated as follows: the possible effect of an antecedent infection upon conception; the consequences of coincident infection and impregnation; the virulent character of the inflammation in a pregnant woman; the comparatively frequent occurrence of so-called gonorrheal rheumatism; the predisposition to streptococcic autoinfection directly after labor; the tendency to streptococcic necrosis of the pelvic organs in such mixed infections; and the frequent necessity of radical surgical treatment to save the patient.

It was commonly and correctly believed that gonorrhea was a cause of sterility, and that a salpingitis of specific origin necessarily prevented conception. But possible exceptions to the rule should be remembered if a mistake in diagnosis was to be avoided.

In hospital practice it was a common experience to see cases of coincident infection and impregnation at the same coitus. Often the patient was a young girl and not infrequently there was a history of seduction, followed by an abortion and consequent infection of the appendages and peritoneum. Fatal results might follow or, at the best, a mutilating operation might be demanded. In this class of cases it was particularly important to save at least one ovary, sewing over the upper edge of the cut broad ligament with catgut after removal of the tube and avoiding mass ligatures. Dr. Hirst had followed many of these cases for years and with satisfaction in observing the continuance of menstruation, the absence of pelvic symptoms, and the patient's ignorance of her mutilation and irremediable sterility.

All had noticed the exaggeration of the symptoms of gonorrhea when the infection occurred after pregnancy was well advanced.

While his practice did not often bring him in contact with acute cases of gonorrhea in the female, his gynecological hospital and dispensary services furnished him with the usual number of gonorrheal pus tubes, hundreds in a year. Out of all this number in a period of over twenty years he said he could not remember a single case in a nonpregnant woman of so-called gonorrheal rheumatism; that was, subacute arthritis of one of

the large joints. But in the University Maternity he had seen a comparatively large number of these cases in pregnant and puerperal women, usually with a clear history of gonorrhea, or with gonococci in the vaginal or urethral discharge.

If his experience was not exceptional, then the child-bearing process must be a potent predisposing factor in this disease.

All had been impressed with the frequency of an autogenous streptococcic infection after labor in patients who had had gonorrhea for years, or had acquired it during pregnancy. It was a common experience to have a woman from the slums brought to the hospital in an ambulance, bathed, and put to bed just in time to be delivered; afterward she would develop a severe streptococcic infection. In most of these cases it was possible to discover a precedent gonorrheal infection. These were the women who most frequently required operative treatment of puerperal infection in some of its forms.

Occasionally an exceptional variety of pelvic infection after labor was observed in women whose husbands were known to have had gonorrhea. It could best be described as a fulminant suppurative salpingitis with pus dripping from the fimbriated extremities of the tubes which were not occluded. There was a vivid red hue of the tubal walls which were somewhat thickened but soft and friable.

Gonorrhea was a serious complication of the child-bearing process; women with gonorrhea should not conceive till the disease was cured; pregnant women with gonorrhea should be treated with more energy than was usually required; the puerpera might require radical treatment to save life.

THE TREATMENT OF GONORRHEA IN WOMEN.

DR. HERMAN J. BOLDT read this paper. The treatment depended upon the stage of the disease. In the acute stage this disease, like other acute illnesses, demanded absolute rest and a light diet. These elements in the treatment were particularly important at about the time of the menstrual period, since at such time exacerbations were most likely to occur; and especially if there had been any physical exertion. Numerous remedies had been recommended for the rapid cure of the disease; none, however, could be relied upon. There was no abortive remedy. During the acute stage the best treatment consisted in boric-acid douches, and applications of stearate of zinc or zinc ointment. The chronic cases required much patience; the mucous membrane had undergone changes as the result of the continued irritation. Repeated bacteriological examination in these cases could only determine whether a cure had been effected. One could not be too careful in pronouncing a patient with a chronic gonorrheal infection entirely cured. Cases of chronic gonorrheal urethritis were very obstinate; the disease might have been present for years without suspicion on the

part of the patient; the diagnosis often was a mere matter of chance. It was important, therefore, if one had reason to suspect gonorrhea, to examine the patient at a time when the urine had not been evacuated for a number of hours. If the disease was present, and the urethra stroked from its posterior parts forward, a droplet of pus might be expressed from it. Thus the diagnosis of gonorrhea might be made. The location in which one might sometimes find the microbic pus was in the small ducts of Skene. It was comparatively seldom that one found vaginal gonorrhea in the adult because of the protection afforded by the pavement epithelium of the vagina.

In gonorrheal endometritis Dr. Boldt advised the thorough curetting of the uteri in such cases, and the use of the sharp curet for the technic. Of course one should not think of using this heroic treatment in acute conditions, or when the adnexa were affected, or when there was any evidence of pelvic inflammation. He asked that they consider the case of a patient who had recovered from the acute stage of urethral gonorrhea. The acuteness had entirely passed off, and there were no evidences of invasion of the adnexa or pelvic peritoneum. But the microscopical examination of the secretion from the cervical canal showed the presence of the gonococci. In such instances Dr. Boldt asserted that, if strict antiseptic precautions were used, there was no danger connected with a careful dilatation of the cervical canal and the use of the sharp curet. Such treatment he believed to be more efficient than the local office treatment alone.

After the use of the curet the uterus should be packed with gauze saturated with, for example, a solution of a silver salt.

Patients thus treated made a more rapid recovery and were not so likely to have an affection of the adnexa at some future period. The best time to undertake treatment in order that it would be most effectual was shortly before the menstrual period, when the mucosa was more or less thickened. The curetting should be done thoroughly; after its completion the entire cavity should be packed with gauze medicated with a silver preparation.

All patients with gonorrheal salpingitis should be treated most conservatively. A large proportion of such women have more or less extensive pelveoperitonitis; if one had the temerity to operate on such cases, a high rate of mortality would be recorded; such operations would be unjustifiable. These patients should be kept in bed, given suppositories of codeine if the pain was severe, and the majority of them would make a complete recovery. If the Fallopian tubes became so distended as to form what was known as "sactosalpinges" it was useless to hope for a cure without surgical intervention. Exsection of the tubes was necessary for the symptomatic relief of the patient.

With regard to the nonsurgical treatment of acute conditions, when the culdesac of Douglas was filled with exudate, the result of a pelvic peritonitis, Dr. Boldt did not approve of;

whenever the examining finger could determine the presence of an exudate in the pelvis which could be readily evacuated by means of a vaginal section, this should always be done.

With regard to the use of *antigonococcus* vaccines, the results had been negative in all patients upon whom they were tried.

DISCUSSION.

DR. JAMES CLIFTON EDGAR said that Dr. Hirst did not mention any very acute affections as occurring during pregnancy and Dr. Hirst's view regarding this was in accordance with his own. As a matter of fact, they did not see them; they did not have much harm from gonorrheal infections unless such infections took place at the time of conception. There were those who were so optimistic regarding the effect of a gonorrheal infection during pregnancy as to deny morbidity or mortality; it did seem, however, that the enlarged uterus and the membranes etc., offered more or less a protection to the uterine cavity against infection from the gonococcus. When the patient came to labor, then a different clinical picture was presented. There might be a latent gonorrheal infection in, for instance, the endocervical glands and, at the time of labor, this might be lighted up and cause trouble. Dr. Edgar was speaking entirely from the obstetrical standpoint.

Another point of importance was that they often saw in cases of subacute or chronic gonorrheal infections a thickening of the cervix which gave trouble, dystocia during labor; this hardening of the cervix was the result of a subacute or chronic condition and prolonged labor. It seemed to Dr. Edgar that the problem before them in the matter of gonorrhea during pregnancy and the lying-in state in its various clinical types was to know of some method of diagnosis so that they might be forewarned before the puerperium. Dr. H. J. Schwartz and Dr. McNeil, working in the laboratory of clinical pathology at Cornell, claim that they have a method of determining from a blood examination the presence of gonococci. Their method was the development of a complement fixation test for the determination of a gonococcus antibody. The method was analogous to the Wassermann method. Dr. Schwartz and Dr. McNeil reported upon this method at the Section on Medicine, New York Academy of Medicine, October 18, 1910, and it was with their permission that he referred to the method. Dr. Bailey, Dr. Edgar's associate at Bellevue, sent Dr. Schwartz and Dr. McNeil several specimens of blood from cases with fever in the postpartum period suspected of being due to the lighting up of old gonorrheal infections, and they returned positive reports on certain cases where it seemed plausible to believe they were correct.

One case of chronic postpartum sepsis where the only evidence of the trouble was a single inflamed knee-joint gave a positive

complement fixation test. Gram-negative cocci resembling gonococci were obtained by a smear from within the uterus. Blood counts were 13,000, 12,000, 8,000. They believed that this case was one of latent gonorrhea during pregnancy and starting up postpartum, becoming a general blood infection.

Believing the test might be of value in determining the presence of active gonorrheal conditions, antepartum, and thus become of value in the prevention of ophthalmia neonatorum in the newborn, they had had some twenty cases examined with 50 per cent. positive results. And in sixty gynecological cases Dr. Schwartz and Dr. McNeil claimed 25 per cent. of positive results.

In positive obstetric cases they intended to cleanse the vagina thoroughly at full dilatation, to hasten the second stage, and to irrigate the babies' eyes every six to eight hours with 20 per cent. argyrol during the first two or three days of the puerperium. This work would be followed and reported upon later.

The results of their work appear too good to be true, and the foregoing percentages too high; but when they recollected that upon such authority as Record and Erb gonorrhea was claimed to be present in the male from 45 to 80 per cent. the percentages in the female did not seem to be unbelievable.

DR. FRANKLIN A. DORMAN said that many obscure cases of sterility seemed to be due to an antecedent gonorrhea and even when it was impossible to get a history of this condition. A large number of women who have had, or who have gonorrhea will not conceive. If they do conceive, however, the disease process may remain latent and without any warning at the birth of the infant danger from ophthalmia occurred. In some cases exacerbations with acute manifestations arose during the late period of pregnancy.

Sometimes a woman would become infected with gonorrhea at the time she conceived and this would be followed during her pregnancy with disastrous uterine consequences. It was very rare to find that these women with an acute gonorrhea, infected during pregnancy, had an infection advance beyond the cervix; but they did have an unusual exuberant growth of vulvar vegetations. At the Bellevue dispensary they often made a diagnosis of pregnancy when women presented themselves with these exuberant condylomata. As a rule their diagnosis was correct. Many of these cases were seen at the City Hospital and the growths appeared so very aggressive that active treatment was required to keep them within bounds. He recalled one case seen one or two years ago; in this individual the mass was so large that surgical interference was necessitated. These vegetations should be treated energetically, and usually with some caustic such as carbolic acid. In his experience Dr. Dorman had not seen gonorrheal rheumatism more common during pregnancy than when the women were not pregnant.

DR. ROBERT L. DICKINSON, in answer to Dr. Hirst's query

regarding gonorrheal rheumatism and its frequency in the pregnant state, replied that he very rarely saw gonorrheal rheumatism and had not seen an instance during pregnancy.

Dr. Dickinson gets the impression from Dr. Hirst's paper that he believes puerperal gonorrheal salpingitis often flames into peritonitis in such a way as to call for laparotomy, through admixture with the streptococcus or staphylococcus. He thought the very greatest difficulty was encountered in making such decision whether a laparotomy was justifiable or not. It should be remembered that the peritoneum had a very great ability to fight the enemy, and particularly the hereditary enemy of centuries, the gonococcus. He was now seeing, for extensive tubal peritonitis, cases between the seventh and the tenth week—four referred cases. Over all hung, by an absorbable catgut thread, a knife of Damocles, but though severe and acute, and with excessive involvement, all were masses practically out of the pelvis, and were slowly lessening.

Treatment of chronic gonorrhea in women, Dr. Dickinson said, presented one rebellious though minute trouble. Associated long years with Dr. Skene he had learned his method of treatment of chronic infection of the urethral glands.

Patchy chronic vulvitis, or chronic irritability of the bladder, or caruncle, or dyspareunia were often caused. Until this trouble was located and treated properly there would be no cure of these affections. Dr. Skene took a tiny cautery platinum wire tip and passed it into the gland and cut downward and outward to the vestibule or vagina with the hot wire. The slitting has been sometimes carried upward into the urethra. The first is often followed by an everted meatus, which remains irritable and open to bacillus coli infection. The mild cases the speaker injects with pure carbolic acid, using the little syringe dentists use in cases of pyorrhea alveolaris, the Dunn syringe with blunt gold needle,



Dunn syringe with blunt needle, for injecting urethral glands with carbolic acid or novocain.

No. 1 (Old Style). He looked up in the office records twenty-nine cases of chronic infection of the urethral glands, nineteen of them gonorrheal, three tubercular. A number of them would not yield to the carbolic acid treatment. The best method was as follows: After injection with novocain-adrenalin with a Dunn needle the finest platinum cautery electrode, all metal, of Wappler's, is passed to the bottom of the gland, which measures one-eighth to one-quarter inch, even at times over one-half inch. The current is then suddenly turned on very hot for an instant. There is no cutting or splitting outward toward either vagina or urethra. The number of treatments was usually two, at an interval of three weeks. Among thirteen thus treated,

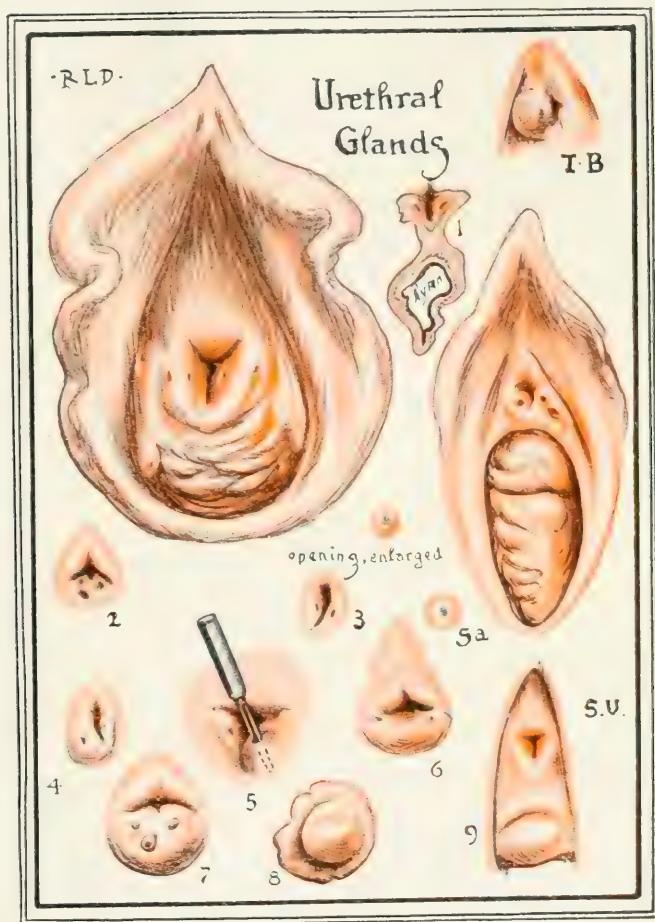
ten were completely cured. All were long-standing cases. If caruncle is due to this, no amount of snaring would do any good. One must get at the bottom of the cause.

DR. GEORGE GRAY WARD, JR., said that the question of the treatment of gonorrhea in the female was, of course, of prime importance and of particular interest to the gynecologist as it was such an important etiological factor in gynecology. Gonorrhea in the female should be classified into two divisions, depending upon whether the infection was below the so-called danger zone (the internal os) or above it. Every case of acute gonorrhea situated below this danger zone was amenable to treatment because one could make direct applications of strong solutions of germicidal agents to those parts; but if the infection was above the danger zone, local treatment during the acute stage is absolutely contraindicated, on account of the inevitable destructive inflammation of the appendages which will follow.

The treatment Dr. Ward had followed for many years was to use a solution of nitrate of silver of the strength of 30 grains to the ounce in cases where the disease was below the danger zone, that is, the vulva or vagina, in the region of the cervix. The patient is placed in the knee-chest position, the vulva opened with a retractor to admit air to dilate the vagina and obliterate the vaginal folds, and this solution freely applied to whole tract. After having thus cauterized the diseased area as thoroughly as was possible, the upper vagina was packed with gauze impregnated with a 1-5,000 bichlorid solution; this was done for the purpose of preventing the disease traveling up beyond the danger zone. Vaginal douching is absolutely prohibited on account of the danger of carrying infection to the region of the cervix.

With regard to Dr. Boldt's suggestion of curetting the uterus, Dr. Ward did not believe that he meant this procedure to be adopted in the acute cases or even subacute cases; if the disease was confined to the cervix, or above, it had better be let alone; any attempt at manipulation of the intrauterine cavity will almost surely cause the disease to extend up beyond the internal os and into the tubes and so produce permanent damage to the structures. If the general practitioner gets the idea that cases of acute gonorrhea should be curetted, there would be great harm done. Such teaching is therefore dangerous unless very strongly qualified. Nature's barrier would be done away with, and the surface of the endometrium would be denuded, and the acute gonorrheal pus present would be rubbed deeply into the tissues, thus vaccinating the uterus with the infection, just as we vaccinate to produce cowpox. The curet should never be used except there were positive indications for its use.

With regard to the use of vaccines, there were a number of careful observers who had had different experiences than Dr. Boldt; in vulvovaginitis in children it seemed to Dr. Ward that one of our best weapons in fighting this disease was in the use of the vaccines. Certainly, reports given out by Dr. Hamilton at



GONORRHEAL INFECTION OF THE URETHRAL GLANDS.

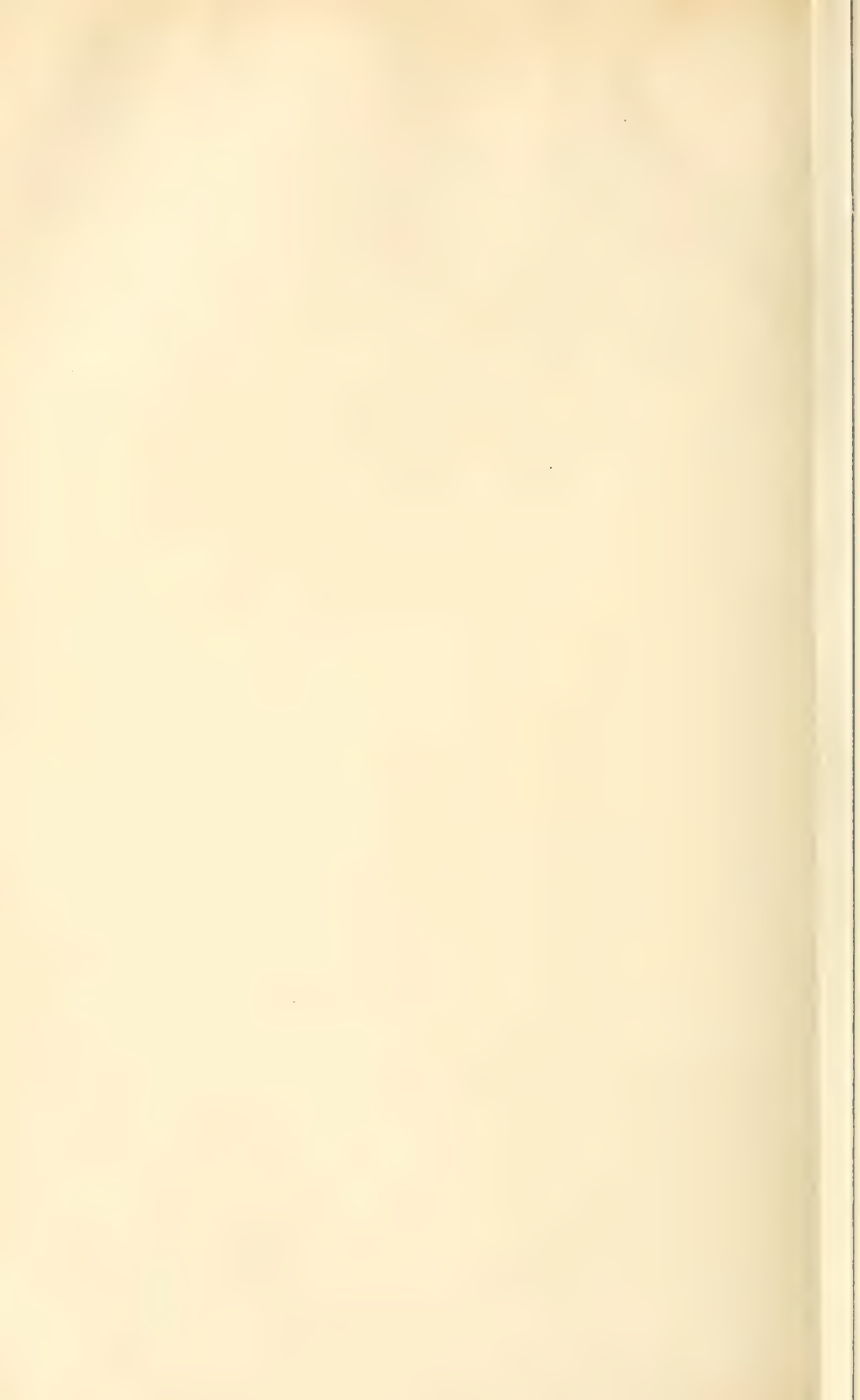
The large figure shows the bright red patchy inflammation in the neighborhood of the meatus and the inflamed and gaping opening, with six glands involved, or more than the usual number.

The vulva to the right exhibits mild infection of three glands, and patches, as seen after the menopause. "S.U." is senile urethritis from the bacillus coli, the glands not affected. "T.B." is the transparent, edematous, jelly-like swelling of a gland mouth affected by the tubercular bacillus.

Fig. 1 shows the meatus and hymen, the former with urethral tabs, the gland openings infected as they rarely are with this hypertrophy.

Figs. 2 and 3, the common location of gland openings. Above 3 is the infected gland opening enlarged to show the red ring. Fig. 4, one gland infected, one free. Fig. 6, both rather actively infected and swollen. Fig. 7, the active purulent stage of Fig. 2 as, in the former, Fig. 2, the cautery has nearly obliterated the glands. Fig. 8, abscess of the left gland in a case with fringed, hypertrophied meatus.

Fig. 5 demonstrates treatment. The delicate tip of the platinum wire electrode is longer than usual to reach to the bottom of the pocket, which may run in half an inch. The hot current is turned on suddenly, then the wire withdrawn, without any cutting, Fig. 5a showing the white ring resulting.



the Presbyterian Hospital and Vanderbilt clinic, and others seemed to make them worthy of trial. There appeared to be something in the use of vaccines in these cases, and certainly they seemed to promise more speedy cures in children.

Dr. Ruth Vail, before the Chicago Medical Society, recently made a very valuable report of the use of vaccines in gonorrhea in adults, because the women under observation were inmates of the State Reformatory and were therefore constantly under proper control. Dr. Vail's observations were of seventy cases of acute gonorrhea which she divided into six series as follows:

1. Those treated with vaccine alone; as much as 25,000,000 of stock vaccine was given once a week.
2. In this series, in addition to the stock vaccine injections, there was given local treatment, twice a week, of pure ichthyol.
3. In this series treatment with ichthyol alone was given.
4. In this series of cases a daily douche of normal saline solution only was given.
5. In this series of cases antigonococcus serum was given.
6. In this series, twice a week, a 4 per cent. solution of silver nitrate solution was used; in cases with urethritis a 2 per cent. argyrol solution was given by injection.

The conclusions reached were that the best results were obtained from the use of the vaccines and the serum; as to results they tallied about equally in regard to the disappearance of the cocci and discharge. The use of the silver nitrate gave no better results than any other treatment employed. The employment of the vaccines had certain advantages over the serum, such as: 1, the volume of the dose was very small, one-quarter that of the serum and, therefore, there was less reaction; 2, the intervals between the injections were longer; 3, the preparation of the vaccines was very much more simple; the use of the serum necessitated immunizing animals and was much more expensive.

Dr. Dickinson had referred to chronic gonorrhea and especially to the involvement of Skene's glands. As he also was an old pupil of Dr. Skene, he had long been interested in this phase of the disease. Dr. Ward said the method that he used was that after cocainizing the parts the ducts should be laid open with a small bistoury, such as the ophthalmologist used in opening the tear ducts; a piece of solid stick of lunar caustic is then fused with a flame on the tip of a fine wire probe so as to form a minute bead of silver nitrate at its end; this is then run up and down in the gutter made by the bistoury, and the gland is destroyed after several applications. A procedure of this kind was followed, in his experience, by the best of results, and the degree of cauterization could be better controlled than with the thermocautery.

DR. JOHN O. POLAK, in answer to Dr. Hirst's query regarding the frequency of gonorrheal rheumatism occurring in the pregnant woman, said that in his experience the only cases he had encountered were in the pregnant woman. He could not recol-

lect in eleven years work at the Polhemus clinic a single case of gonorrheal rheumatism that did not occur in one who was pregnant. The acuteness of a gonorrhea in women depended upon the receptivity of the particular patient. The gonococcus, to his mind, was similar to the streptococcus; its activity and virulence depended upon certain soils; in some soils the gonococcus was particularly active. The puerperal woman presented such a fertile soil. Urethral lesions were more frequent in women just married or women with small introitus. The parous women were more apt to have an infection of the cervix.

One point of particular interest to Dr. Polak was that if one left these acute gonorrheal cases alone, giving them rest, using cleanliness and postural drainage for the discharges, the acute stage would pass over faster than by any other form of treatment. The chronic and the subacute cases were often extended by too much local treatment in the office. This was a point that should be emphasized, and was true not only in the chronic but in the subacute cases. In these women with a mixed affection, with a gonorrheal endocervicitis, one should not be too heroic in his treatment, because by so doing he lowered the patient's resisting powers and spread the infection past the safety zone, namely the cervix.

Dr. Polak said he took issue with what Dr. Boldt said in teaching that cases of subacute or chronic gonorrhea should be cured. What Dr. Boldt might do successfully others could not do. They all knew that the use of the curet in cases of chronic gonorrhea might and did frequently set up an active endometritis. These patients returned to you after years with a chronic discharge. If it became necessary to remove the tubes, he thought it better to do a hysterectomy, leaving the ovaries. What Dr. Boldt advised he thought was bad teaching for the general practitioner.

One of Dr. Polak's assistants had been using a saturated solution of picric acid in these gonorrheal cases; the results of his work had not yet been published. In about one hundred (100) cases of gonorrhea of the vagina, in which the gonococcus was found in pure culture, three to five treatments with picric acid entirely cleared the field of the gonococci. The method employed was very simple; the vagina was cleaned out thoroughly; a tubular speculum was introduced and into the vagina was poured 1 or 2 ounces of a solution of argyrol. Then a wad of gauze was soaked in a saturate solution of picric acid in glycerin and placed in the vagina. It was amazing to see the controls come back clear of the gonococci in from three to five treatments. Further reports on this will be forthcoming shortly in a monograph by Dr. Geis.

DR. HENRY DAWSON FURNISS said that his experience had been mostly with the chronic cases, and that in these the most frequent lesion found was in the urethra. Such patients usually gave a history of an acute attack, from which they recovered

spontaneously, or because of treatment. After a time there was likely to occur another attack, characterized by marked frequency of urination, not so troublesome at night as in the day; there was seldom any burning in these later attacks. Little if any pus was to be found in the urine. Upon examination there was to be found frequently some congestion of the trigonum and nearly always congestion or infiltration of the urethra, generally in the anterior half or two-thirds. Any irritation, whether caused by chemicals or disease, seemed to cause the excretion of an actually greater amount of urine, of low specific gravity, than normal. He detailed one instance where the patient, after a nitrate of silver bladder irrigation passed 20 ounces of urine in forty minutes. The symptoms do not always bear a relation to the extent of the lesions, some patients with only slight congestion of the urethra being much troubled, while others with a urethritis, in which the mucosa was swollen and bled on gentle touch, scarcely complained.

He said that there were other causes of urethritis than gonorrhea. Many cases are seen in women of the so-called rheumatic diathesis, and these responded well to treatment directed along this line. A few follow instrumentation, such as catheterization, especially after operation. He said that one should be on guard not to ascribe all postoperative cases to catheter infection. Some of these have acquired a gonorrheal infection after leaving the hospital from the husband who became infected during the wife's illness. He has under his care now a woman infected nineteen years ago in such a manner; after learning that he had infected his wife, the husband committed suicide.

There occur many instances of the infection of Skene's glands, but not as frequently as generally supposed. As detailed by Dr. Dickinson, many of these are diagnosed as caruncles, especially when the gland on one side only is infected. He has given up the cautery in the treatment of these cases, as the destruction of tissue is too great; in the instances in which he does use it, it is applied only for a brief period after the duct is thoroughly laid open. For anesthesia he injects with a hypodermic syringe a solution of $1/4$ of 1 per cent. eucaïne, in a 1-8,000 adrenalin solution. This gives perfect anesthesia and complete hemostasis. To open the ducts he uses a wire nasal speculum, a lacrimal probe, and a long slender bistoury.

He considered congestion and infiltration of the urethral mucosa, especially of the proximal one-half, much more frequent than infection of Skene's glands. He treats these cases of chronic urethritis by thorough dilatation of the urethra with Hank's uterine dilators, and making topical applications of 1 to 7 per cent. nitrate of silver through the Kelly cystoscope with the patient in the knee-chest posture. He considered the massage of the chronically inflamed urethra by the sounds of great benefit. He also employs hyoscyamus and the alkaline diuretics internally.

DR. A. JACOBI said that he saw more subacute and chronic

than he did acute cases.* The difficulty in the treatment of such cases was that when silver nitrate, 2 to 5 per cent., was introduced into the uterus it would not spread; its effect was apt not to cover the whole mucous membrane. Therefore it was often necessary to dilate the cervix. It was not necessary, however, to dilate the cervix in the usual run of practice. Nitrate of silver cauterization was a local one only. Dr. Jacobi had been using for a long time tincture of iodine; this agent would spread over the entire inner surface of the uterus.

This application could be made very easily and it was not necessary to dilate the cervix before its application. For this purpose he preferred to use Ferguson's cylindrical speculum.

DR. HERMAN J. BOLDT, closing the discussion, said that they should guard against any intervention during an acute process; in the presence of acute or chronic pelvic peritonitis, any inflammatory condition of the adnexa caused by gonorrhea, one should not curet the uterus, as suggested. In the class of cases for whom he had advised the treatment he had never found an instance resulting in any way unfavorable.

With regard to the vaccine treatment, he said he had not had a sufficient number of cases upon which to pass judgment; so far, however, he had not had favorable results; negative results were obtained in both the young and the old.

One of the most difficult conditions to cure, to which Dr. Dickinson had already referred, was the infection of the ducts of Skene.

With regard to gonorrheal infection in the puerperal woman, frequently women conceive while they have chronic gonorrhea. During pregnancy she had, as a rule, no trouble whatever; but after delivery, in a large number of instances, there would be a rapid spread of the infection to the uterus, adnexa, and pelvic peritoneum.

REVIEWS.

CARE OF THE PATIENT: A Book for Nurses. By ALFRED T. HAWES, A. M., M. D. With six illustrations. Philadelphia, P. Blakiston's Son and Co., 1012 Walnut Street, 1911.

The six chapters cover the entire field of medical, surgical and obstetrical nursing. The text is succinct, the directions sufficiently specific, and the various lines where the duties of the nurse end and those of the physician begin are nicely drawn. The work is ably written, comprehensive, and no advice is offered which can be criticized.

E. M.

* He made applications to the endometrium by means of absorbent cotton wrapped around a whalebone probe of proper length.

TRANSACTIONS OF THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS. Eighth Triennial Session, held at Washington, D. C. May 3 and 4 1910. Published by the Congress, New Haven, 1910.

The majority of the papers published in this volume deal with artificial immunization, including anaphylaxis and vaccine therapy. The subject of vaccine therapy especially is discussed exhaustively and from every clinical view-point. To those who desire an excellent summary of the present status of this subject, this volume, therefore, will prove of great value. E. M.

THE TRANSACTIONS OF THE EDINBURGH OBSTETRICAL SOCIETY.
Vol. XXXV, Session 1909-1910. Edinburgh, Oliver and Boyd, Publishers to the Society, 1910.

Of the more important communications in the proceedings we may mention: The histological changes associated with an early abortion, with special reference to the vessels of the decidua, by B. P. Watson and Henry Wade; bacillus coli infection of the urinary tract complicating pregnancy, by E. N. Burnett; ovarian epilepsy and its treatment by operation, by H. S. Davidson; a simple perineal operation, as used in cases of prolapsus uteri, by J. W. Keay; a short note on the treatment of vomiting following chloroform anesthesia, including the use of adrenalin, by J. W. Keay; some practical points in the life-history of uterine fibromyomata, by W. N. Hautain; and a case of antenatal pneumonia, by A. Don. E. M.

STATE BOARD EXAMINATION QUESTIONS AND ANSWERS of forty-one states and two Canadian provinces. A practical work giving authentic questions and authoritative answers that will prove helpful in passing state board examinations. Reprinted from the Medical Record. Third edition, revised and greatly enlarged. 819 pages, New York, Wm. Wood & Co., 1910. Price, \$3.00.

The title sufficiently indicates the scope and character of this book. The construction of a work of this character is a large task but is labor well expended. The book fulfills a definite need not only because the questions cover nearly the entire field of medicine, but also because they furnish the prospective candidate a clue to the individuality of the particular State Board whose examination he is about to take. E. M.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.
Vol. XXXV. Philadelphia, Wm. J. Dornan, Printer, 1910.

This volume of some 600 pages contains the matter presented before the Society at its thirty-fifth annual meeting held in Washington, D. C., in May, 1910. An abstract of the proceedings and many of the papers have been published in this JOURNAL.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. Vol. xxii. The Maple Press, York, Pa., 1910.

The volume contains the proceedings of the twenty-second annual meeting of the Association held at Fort Wayne, Indiana, in September, 1909, and published in this JOURNAL for November, 1909, and later.

BISMUTH PASTE IN CHRONIC SUPPURATIONS; ITS DIAGNOSTIC IMPORTANCE AND THERAPEUTIC VALUE. By EMIL G. BECK, M. D., Surgeon to the North Chicago Hospital, Chicago, Ill. With an Introduction by CARL BECK, M. D., and a chapter on the application of bismuth paste in the treatment of chronic suppuration of the nasal accessory sinuses and the ear by JOSEPH C. BECK, M. D. pp. 230. With 81 engravings, nine diagrammatic illustrations and one colored plate. St. Louis, C. V. Mosby Co., 1910.

The author describes the technic and indications for the use of the bismuth paste, the contra-indications, the very remarkable therapeutic effects obtained in certain chronic sinus conditions, the limitation of the method and the causes of failure, bismuth poisoning and its prevention, and, in general, shows of what great value the method can be to the general practitioner as well as to the surgeon.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Tetania Gravidarum.—Eduard Frank (*Monatschr. f. Geb. u. Gyn.*, Nov., 1910) describes as tetany of pregnancy a condition in the pregnant woman in which intermittent tetanic cramps attack the muscles of the extremities, face, larynx, etc. When severe they are very painful, and when the larynx is affected attacks of suffocation supervene. Trophic changes appear in the nails, hair, and skin. If pressure is made in the bicipital sulcus a typical attack of spasm begins; the galvanic excitability is increased; there is an increased irritability of the motor nerves; the nerves of sensation are more responsive to electrical and mechanical stimuli. The majority of such cases do not come to the obstetrician, but to the general practitioner. This affection is usually recurrent in each pregnancy and in each successive pregnancy the violence and extent of the spasms is increased. Between the pregnancies the patient is entirely free from this trouble. It usually occurs in multiparæ or in nervous, anemic persons. It appears in the latter part of the pregnancy. While the prognosis is generally good, cases have occurred in which death has occurred in one of the convulsions. The author does not believe that there is justification for the induction of premature labor in these cases.

A Peculiar Form of Reaction of the Uterine Mucosa as a Result of Artificial Placentation of Loeb.—Antonio Gasbarrini (*Ann. di Ostet. e gin.*, Oct., 1910) says that Loeb succeeded by making incisions into the uterine horns in causing an artificial formation of decidual tissue in rabbits and guinea-pigs. The incisions were made two to nine days after ovulation, without the necessity of the fecundation of the ovule, or its contact with the uterine mucosa. While ligation of the tubes made no difference in these effects, extirpation of the ovary some time before the experiment prevented the formation of decidua. The author repeated the experiments of Loeb. He found that incisions into the uterus of rabbits caused decidual formation only when the operation was done after ovulation. This reaction occurred ten days after the operation either at the site of the incisions or at some distance from them. When the ovaries had been removed the same effect was produced by injection of fresh ovarian substance dissolved in physiological salt solution. In rats in whom ovulation occurred a few days before the operation no reaction occurred. In the formation of the artificial decidua a secretion furnished by the ovary takes a part as a stimulant.

Acquired Pelvic Contractions in Relation to the Laws of Labor.—Eduardo Fabbriatore (*Giorn. Internaz. d. sci. med.*, Nov. 15, 1910) relates his experiences in one of the provinces of Italy where he conducted an obstetric service among the poor people. There was no near railroad, and but few roads, but there was much large timber to be transported to the railroads. Much of the work of transportation of this timber fell to the lot of the women and children, who carried it on their shoulders and heads. This work was begun by the young girls before the bones were ossified, which does not occur until about the age of twenty. The consequence of this severe labor was a contraction of the pelvis, flattening, with narrowing, caused by the pressure of the weight upon the trunk. The forces which acted on the pelvis were three: the weight on the trunk, the counterpressure of the femora, and the resistance of the pubes. The pressure from above pushes the sacrum down and exaggerates its curvature. A torsion of the ilia occurs, with flattening of the whole pelvic cavity. The narrow and deformed pelves caused the necessity of frequent applications of the forceps in delivery, and many craniotomies were required. The author did not do pubiotomy or symphysectomy because of the squalid surroundings in which the people lived. An added element in the causation of deformity was the poor and scanty food that these people ate. A labor law that regulates factory work will not prevent the effects of such severe labor by the women and children of the country.

Renal Activity in Pregnant and Puerperal Women.—F. C. Goldsborough and F. C. Ainley (*Jour. Amer. Med. Assoc.*, 1910, lv, 2058) have employed the recently recommended phenolsulphone-phthalein test for the functional activity of the kidneys in ten women in the last month of pregnancy and eleven in the first two

weeks of the puerperium. As far as could be shown by routine physical examination, urinary analysis and the course of pregnancy and the puerperium, all of them were normal. The writers' tabulated findings show that pregnant and puerperal women react so differently to the phenolsulphonephthalein test, as compared with other non-pregnant individuals, as to indicate the existence of some radical change in the functional activity of the kidneys in the former. This being the case, great caution should be exercised in drawing conclusions from this test in toxemic conditions.

Pituitary Extract in Obstetrics and Gynecology.—S. J. Aarons (*Lancet*, Dec. 24, 1910) advocates the use of pituitary extract in cases of hemorrhage, intestinal paresis and shock. He has employed it in seventy cases, ten of which he records.

Kidney Displacements and Dystocia.—After briefly describing the ten recorded cases of labor associated with congenital pelvic kidney and two of dystocia due to presence in the pelvis of a movable kidney, Prentiss Wilson (*Surg. Gyn. Obst.*, 1911, xii, 20) reports one of the latter class observed by himself. The patient was a primipara when seen, the cervix seemed to be completely dilated and the head was engaged at the brim in L. O. A. The cavity of the sacrum was filled by a mass presenting the shape, size, and consistency of a kidney and freely movable. During examination by another physician the kidney was forced up above the brim of the pelvis, where it remained. The child was then delivered by forceps. Immediately following delivery the right kidney could be easily palpated, lying in the right iliac fossa. Three days later the kidney was again made out and easily forced up to its normal position.

Ovarian Fibroma Obstructing Labor.—Among the rare causes of dystocia, only two other cases having been reported, according to G. Link (*Surg. Gyn. Obst.*, xi, 1910, 591) is fibroma of the ovary. The writer was obliged to perform Cesarean section upon a primipara of eighteen years on account of the presence in the pelvic cavity of a tumor about the size of a fetal head. The growth was a calcified ovarian fibroma.

Theory of Eclampsia.—J. R. Mitchell (*Med. Rec.*, Nov. 19, 1910) draws a parallel between tetany and eclampsia and attempts to show that deficiency of calcium is the cause of the latter. He quotes MacCallam as saying that clinical research on animals with tetany after removal of the parathyroids shows (1) decrease of calcium content of the tissues, especially the blood and brain; (2) increase of nitrogen excretion in the urine; (3) increase of ammonium output in the urine; (4) relative excess of ammonia nitrogen to urea; (5) increase of ammonia in the blood. The writer claims that we find these five symptoms of tetany in every case of eclampsia. Tetany is due to a deficiency of calcium. Both tetany and eclampsia have similar twitchings, a long-delayed coagulation time for the blood, and a disturbed nitrogen elimination. Eclampsia,

which is tetany plus coma, is a manifestation of still greater deficiency of calcium. Toxemia of pregnancy is a clinical moving picture of the mother's need for calcium. In the early stage she may exhibit her need by eating chalk, slate pencils, or marbles—and her physician calls it idiosyncrasy. Then her teeth decay. The dentist tells her the cause is her morning vomit. She gets softening of the bones—osteomalacia. Gradually edema of the legs develops, and she gets purgatives and hot packs which do no permanent good, and diuretics of potassium which abstract more calcium and make her condition worse. The physician overlooks that calcium in the circulating blood is the necessary, natural heart stimulant. The fetus is nearing term. The mother's bones and teeth have yielded their store—now the nerves suffer their loss of calcium. The nerves writhe in protest, first with intermittent, tetanic twichings, later with frequent tetanic convulsions. Then the physician unknowingly heeds their cry to preserve their calcium by removing the guilty calcium parasite. If the convulsions of tetany and eclampsia have the same underlying cause, then calcium salts must relieve eclampsia. The writer claims to have had such results in several cases. For the mild toxemia of pregnancy he uses calcium lactate 10 grains six times a day, by mouth; for cases seen in profound coma, doses of 30 grains by stomach-tube, by rectal tube, and intravenously.

Spontaneous Separation of the Symphysis Pubis.—In an instance of this accident recorded by F. M. Huxley (*Jour. Obst. Gyn. Brit. Emp.*, 1910, xviii, 327) several previous normal labors point to a healthy condition of the pelvis. The last birth had occurred after an interval of four years, which allowed for a return of the pelvic ligaments to their normal condition. An accidental fall, two weeks previous to labor, may have been a factor in causation, but the patient had very little discomfort from it. The labor cannot be said to have been much prolonged, although it was remarkable for the amount of pain experienced. Separation occurred on the third day after labor, caused by the patient's moving about in bed. This exertion probably completed the separation already begun during labor. Two negative points are to be noted—there was no outward rotation of the lower limbs, nor were they totally incapable of active moment. These conditions were formerly considered to be essentially present. Recovery followed rest on the back with a tight pelvic binder.

Incisions of the Cervix During Labor and Vaginal Cesarean Section of Dührssen.—Jeannin and Garipuy (*Ann. de gyn. et d'obst.*, Nov., Dec., 1910) say that when incisions are made into the cervix to facilitate labor they should be sufficiently long to effectually open a way for delivery, so that they may not prolong themselves by tearing. For this purpose only two incisions need be made, symmetrically placed. The vaginal portion of the cervix must be thoroughly thinned and the lower segment distended. If the incisions are limited to the vaginal

cervix they are without danger; there is no severe hemorrhage and no risk of infection. If they be prolonged beyond this area there is great danger of sepsis and of uterine rupture by long tears. We should not pass the thinned portion covering the head. The incisions should be straight and made between two fingers of the left hand. Any operator accustomed to ordinary surgery should be able to make them successfully. The bladder cannot be easily wounded. The vaginal Cesarean section has its limitation. If the woman is not in labor the fetus may be surrounded by a muscular ring, so that it is necessary to cut through the entire uterine wall. Contracted pelvis, pelvic tumors, and narrow vagina contraindicate vaginal section. The classic Cesarean section better safeguards the interests of the child. The conclusions of the authors are that incisions of the cervix and vaginal Cesarean section should take their place among obstetrical operations in the hospital as well as private practice. Incisions are most simple, but their danger lies in tearing the uterus. They should be used only when we are sure that they will be sufficient, the lower segment being well enlarged and the cervix effaced. In all other cases they should give place to vaginal Cesarean section. Dühressn's operation is to be reserved for occasions in which immediate evacuation must be done and neither the classic section nor forced labor is possible, by reason of lack of suppleness of the cervical tissues. It should be done only with a small fetus.

Pathogenesis and Treatment of Incoercible Vomiting of Pregnancy.—G. Fieux (*Ann. de gyn. et d'obst.*, Nov., Dec., 1910) rejects most of the various theories of the causation of incoercible vomiting of pregnancy as untenable. If the cause were stretching of the uterus the same effects should result from the use of the laminaria and other methods of dilatation. The fact that vomiting occurs in the early months of pregnancy shows that it is not simply a reflex act. If these vomitings were simply hysterical they would never end in death as is the case with pregnant vomiting. The author believes that this kind of vomiting is specific, and should not be confounded with ordinary vomiting. The acceleration of the pulse and the occurrence of neuritis both point to autointoxication. That the symptom ceases when the uterus is evacuated shows that it is due to the pregnant condition. It is due to a substance that is both emetic and toxic. The toxemia in early pregnancy is not the same as that seen at the end of pregnancy. In early pregnancy we see hypotension; in late pregnancy, hypertension. The examination of the urine shows no insufficiency of the liver in early vomiting, while in late vomiting there is diminution in quantity and presence of urobilin and acetone. As to the ovarian theory and the secretory action of the corpora lutea the greatest period of development of the corpus luteum is early in pregnancy, not toward the end; administration of preparations of this body to vomiting patients has no good effect. Why is all the trouble ended by

induction of labor? Pinard calls this kind of vomiting gravidotoxic. The author believes that toxemia is the true cause of the phenomena of incoercible vomiting in pregnancy. As to its treatment; in some cases the lacto-vegetarian diet, electrotherapeutics, or adrenalin is effective in stopping vomiting. In others it goes on until emaciation and weakness are extreme and the pulse is rapid, and then the patient gets well as a result of the interruption of pregnancy. This must be the treatment of last resort.

Uterine Cicatrix in the Corporeal and in Cervical Cesarean Section and the Prognosis in Later Pregnancies and Births.—Franz Al. Scheffzek (*Zeit. f. Geb. u. Gyn.*, Bd. lxxvii, H. 2, 1910) says that when a practitioner has just delivered a living child by Cesarean section he is master of the situation. But the situation is very different in the next pregnancy. The prospect of another section in order to deliver the child is unwelcome. If sterilization has not been done the prospect outside of another section is for induction of premature labor. Another danger exists on the side of the uterine cicatrix, whether it will stand the strain of pregnancy; whether there are adhesions to the abdominal wall or to the intestines. The danger of rupture is variously estimated, from 2 per cent. upward. In the material observed at the hospital in Oppeln there have been two cases of uterine rupture after section. In one the incision was in the fundus; in the other woman in the second pregnancy the dead child was perforated, and in a third pregnancy the rupture occurred. The question of sterilization to prevent further pregnancy depends on the wish of the patient for further children and her fear of a future section. The safety of the cicatrix is problematic. To get a good cicatrix we must be able to place the uterus at rest; but the after pains are severe and their contraction draws upon the sutures and renders them likely to tear out, so that often no muscular tissue is left, and the wall is composed of mucosa within and serous membrane without. Some authors think that the danger is less in the cervical section than in the classical Cesarean section. The author has seen the second pregnancy in ten cases previously delivered by extraperitoneal section. In five cases a second section was made; in four premature labor was induced. The histories of the nine cases are given. The author thinks that the scar tissue resulting from the extraperitoneal section is much more to be relied upon than from the classical Cesarean section. This operation injures neither the fertility nor the possibility of pregnancy, leaves no adhesions and no abnormal position for the uterus, and is much easier to perform..

Extraperitoneal Cesarean Section.—A. W. Russell (*Practitioner*, 1911, lxxxvi, 206) says that in cases of prolonged labor which have probably become seriously infected before they are seen by the obstetrician the ordinary method of Cesarean section is contraindicated, and the question arises whether any of the so-

called extraperitoneal methods can be substituted in order to avoid or lessen the risk to the mother, while everything is done to save the life of the child. The writer favors the mode of operation as described by Döderlein. He uses Pfannenstiel's transverse incision through the superficial layers of the abdominal wall, including the fascia; separation of the recti muscles in the middle line; filling of the bladder with a sterile solution through a catheter, which is kept in the urethra for further injection if needed, to define the contour of the bladder; deflecting the bladder with gauze swab; longitudinal incision of the cervix which has been uncovered in this way; and delivery of the child with the help of a short straight forceps. In completing the operation care is taken to gather up the loose connective tissue in the final stitching of the various layers so as to leave no dead spaces. In infected or very doubtful cases, drainage can be secured through the vagina, when the abdominal wound is closed, or by leaving a sterile or iodoform gauze packing between the uterus and the abdominal surface and only partially closing the wound. The operation may be described as complementary to the usual "classical" intraperitoneal operation. Though it has not fulfilled the original expectation of some that it would be available for undoubtedly septic cases, it may be risked in these cases when the ordinary intraperitoneal method would never be thought of, while it is sure to become an operation of choice in later stages of labor that cannot be completed naturally, in shoulder and other presentations when the position is transverse, and in cases of placenta previa where the child is likely to be viable.

Delivery of the First Arm in Podalic Version or Breech Presentation.—The method proposed by D. C. Guffey (*Sur. Gyn. Obs.*, 1911, xii, 85) consists simply in the delivery of the arm at the same time the body is delivered. When the feet (or the foot, if desired) have been delivered at the vulva, one hand of the operator holds them while the other is introduced into the uterine cavity and an arm seized, preferably the right, since the bringing of this arm into the left sacroiliac fossa will cause the head to engage in the more desirable right oblique with the occiput anterior. The hand of the child is then brought into the vagina and traction is made upon it at the same time as upon the feet or body. The hand of the operator is not removed from the vagina until the breech presents at the vulva or is actually born. As the body is grasped by the outspread hands the arm is included. The advantages of the method are: Much valuable time is saved, since it usually takes as long to deliver the first arm from a nuchal hitch or extended position as it does the head. The child's life is, therefore, less endangered than by the usual method. Lacerations of importance are less likely to occur, since the usual haste or violence are unnecessary. Moreover, perineal relaxation may be secured by the hand and breech at the time of the birth of the latter. Fractures of the humerus or clavicle will be less likely to occur, since the uterus affords an abundance of room for mani-

pulating the arm; a nuchal hitch can be easily corrected by the hand in the uterus, while it is corrected with difficulty in the usual method of delivery. If cervical dilatation is not complete it may be completed manually when the hand is passed in for the arm. This is of special importance in breech presentations.

Treatment of Puerperal Eclampsia.—F. J. Plondke (*Jour. Am. Med. Assn.*, 911, lvi, 115) has successfully employed combined venesection and infusion in seven cases of eclampsia, two of convulsions in chronic nephritis and one of subacute nephritis. In every case the convulsions ceased at once and did not recur. No other treatment was employed in these cases except a dose of salts every morning, and a hot vapor bath once daily for a week as a matter of precaution. The same treatment was employed in the other seven. The amount of blood withdrawn and the quantity of salt solution introduced guided by the condition of the pulse, while the blood was escaping. At the first sign of weakness the infusion of salt solution was begun, with an invariable improvement within a few minutes.

GYNECOLOGY AND ABDOMINAL SURGERY.

Gangrenous Fibromyomata Uteri.—E. A. Rundquist (*Post-Grad.*, Oct., 1910) records two cases of gangrene of uterine fibroids. He states that necrosis occurs in 5 per cent. of all fibromyomata uteri; it is a serious lesion and must be treated by early operation; there may be a perfectly normal antecedent history. Menopause does not lessen, on the contrary advancing years increase the likelihood of gangrene. In the presence of fibromyomata uteri, all intrauterine instrumentation should be done, bearing in mind the possibility of this serious degeneration which may follow. While opinions vary as to the advisability of removing all fibromyomata as soon as possible after diagnosis is made, they should certainly be under careful observation; and in the presence of sudden transition from a quiet to a stormy course, with acute pain and tenderness in lower abdomen, increase in size of tumor, a foul vaginal discharge and an associated septic intoxication, the treatment must pass from the expectant to that appropriate for the surgical emergency under discussion. Pedunculated submucous tumors should be removed at once, as 43 per cent. necrose. Necrotic intraabdominal fibroids with infection of the cellular planes may give a picture similar to septic infection after pregnancy, if seen for the first time late in the disease; prognosis is bad. Complications may give symptoms which outshine the symptoms of the dying fibroid. One should not wait for too great a refinement in diagnosis; operation is safer than waiting. Nor should one be deceived by the subsidence which follows the acute onset; it is only seeming and not real as is seen also in gangrenous appendicitis. In the more extensive lesions the pulse curve will remain high, even though the temperature may fall; in the more moderate cases, although the morning temperature may be normal or even below, the pulse rate will remain somewhat accelerated.

Experimental Basis of Ovotherapy.—Robert T. Frank (*Arch. Int. Med.*, 1910, vi, 314) has endeavored by animal experimentation to determine whether there occur any biological reactions to injections of corpus luteum upon which ovotherapy may rationally be based. He finds that corpus luteum extract, injected intravenously in sufficient concentration, proves rapidly fatal in consequence of intravascular thrombosis. Corpus luteum extract of a heterologous species, given subcutaneously, by mouth, or by a combination of these routes, does not replace the normal action of this gland of internal secretion. The injections do not suffice to "sensitize" the uterus and enable it to produce Loeb's deciduomata and do not bring about such epithelial changes as are noted after follicular rupture. Corpus luteum extract injections call forth no recognizable reaction in the hypophysis.

Parasitic Myomata.—Kelly and Cullen have reported only two cases of complete separation of fibroid tumors from the uterus in 1674 cases. To these, E. H. Richardson (*Surg. Gyn. Obst.*, 1910, xi, 297) adds the third case seen at the Johns Hopkins Hospital. This was strictly a so-called parasitic myoma. It was situated well up in the umbilical region, with no uterine connection and adherent to the small intestine, parietal peritoneum, and omentum. From the latter it received a vascular supply which was shown to be insufficient by the degenerative changes in the tumor. In connection with this the writer calls attention to the abundant supply of thin-walled vessels often found passing from omentum to tumor in such cases and the consequent great danger incurred in attempting to determine the degree of mobility of such a tumor before the abdomen is opened.

Treatment of Fibroma Uteri by the x-rays.—H. Bordier (*Presse Med.*, Nov. 2, 1910) says that it is quite possible to obtain a cure of fibroids by means of x-ray applications provided that the fibroid has not been too long in existence. He limits the time for favorable effects to fibroids under seven years of age. The best effects are obtained in treating small fibroids of recent date, and small hemorrhagic fibroids. The reduction in size occurs in four or five months in these cases. Fibromata reaching to the umbilicus, if less than seven years old may also be cured. They grow smaller, the hemorrhages decrease, and all general symptoms disappear. An absolute cure is to be expected in all of these types of fibroid, but in older tumors that are hardened surgical intervention is to be preferred. The less penetrating rays are filtered out by means of aluminum shields. The applications are made over the ovarian regions and over the region between the umbilicus and the pubes. A day is allowed to elapse between the application over the ovaries and that over the center of the abdomen; another day elapses and then the same order of applications is repeated. The thickness of the shield is increased at each sitting. After twelve days a rest of three weeks is taken, treatments being arranged so that menstruation occurs in this interval. Then a new series of applications takes place. The menopause occurs after two or

three series of treatments. The Graafian follicles atrophy but the internal secretion of the gland does not cease. No dermatitis is created if the technic is observed. The menopause simulates closely a natural change.

Vaginosacral Hysterectomy.—Chaput (*Rev. de Gyn.*, Oct., 1910) describes an operation which he calls vaginohysterectomy, which he has used successfully in operations on the uterus, vagina, and bladder. It is made by an incision which starts from the neighborhood of the right posterior iliac spine, follows the right border of the sacrum, passes at equal distances the anus and the ischium, and terminates in the middle of the right labium majus. All the tissues down to the peritoneum are cut, including the vaginal wall. This presents the advantages of the vaginal route and of the abdominal route; it gives plenty of light and room, is very far from dangerous, and leaves no abdominal cicatrix. It is especially indicated in vesicovaginal fistula which is difficult of access, and for operations on the uterus and adnexa in patients who object to an abdominal cicatrix. It is useful for difficult operations on the rectum and pelvic colon, and upon the bladder. The author has operated by this method on salpingitis, uterine fibroma, adherent ovarian cysts, and uterine cancer. The incision opens up a large cavity with plenty of room to manipulate, in contrast with the narrow field presented by the vagina.

Tuberculosis of the Fundus Limited to the Myometrium.—Roberto Alessandri (*Il Policlinico*, October, 1910, also *Surg. Gyn. Obst.*, 1910, xi, 449) tells us that tuberculosis of the female genital organs affects for the most part the tubes, ovaries, or broad ligament. Tuberculosis of the uterus itself is comparatively rare. Tuberculosis of the body of the uterus is relatively more frequent than that of the cervix, but involves the mucous membrane. It may be miliary in the mucosa, ulcerative, caseous, or in form of a pyometra. Exceptionally it involves the muscle of the uterus. The author has collected a number of observations of this condition in literature, and presents one observed by himself, in which there was a caseous mass localized in the uterus, and a miliary process which had spread from it. It was successfully removed with the entire uterus, and the patient recovered.

Abdominal Exohysteropexy in Severe Displacements and Total Prolapse of the Uterus.—Sante Solieri (*Zeit. f. Geburts. u. Gyn.*, Bd. lxxvii, H. 2) gives his experience with the use of the method of Spingaro, somewhat modified by himself, in total *prolapsus uteri* and severe uterine displacements. He publishes six cases operated on by himself. The normal position of the uterus is almost horizontal, and retroversion is the beginning of the prolapse. The tubes and ovaries, either as a result of adhesions or of shortness of the ligaments, fall toward the center of the abdomen and the fundus of the uterus and increase the mass of prolapsed tissues. Straining at stool and fullness of the bladder and bowels aid in making the descent worse. To this is added a relaxed condition of the ligaments and supporting muscles, and of

the perineum, together with its rupture in multiparæ. The author begins his treatment by keeping the patient in bed for five or six days with the uterus replaced; this allows the congestion and edema of the parts to disappear and puts the tissues in a better condition for the operation. He opens the abdomen in the middle line, below the umbilicus, and draws up the uterus, resects the tubes between two ligatures, thus lessening the size of the mass to be retained, and insuring sterility. He then draws out the uterus and sews the peritoneum snugly about it before fixing that organ to the abdominal wall. At the same sitting he does a plastic operation for the repair of the perineum, and to decrease the size of the vagina, cystocele, and rectocele. The remote results of this operation have proven to be excellent as far as the author's cases are concerned, some of which were done as much as two years ago. Some of these patients are able to have connection normally. No bladder troubles have been left behind. The author states his belief that combined perineal repair with exohysteropexy is to be recommended in prolapse of the uterus with cystocele and rectocele, and in severe cases of retroversion or torsion of the uterus. It is desirable to combine these operations at the same sitting. The cutting of the tubes between ligatures and anchoring the uterus under the skin of the abdomen produces a firm and durable fixation of the organ. The possibility of a separation of the abdominal muscles and hernia is avoided by a careful suturing of the walls. It is advisable to avoid placing the sutures in the vicinity of the uterine arteries so as to prevent bleeding into the abdomen. Both immediate and remote results of the operation are good.

Remote Results of Fulguration.—René Desplats (*Jour. des sci. méd. de Lille*, Oct. 15 and 22, 1910) has selected from the published cases treated by fulguration those that were treated one year or more ago. He excludes all those operable cases that could have been cured by operation alone, and all those in which not all the macroscopic cancerous masses were removed before fulguration was used. He concludes that a wound containing appreciable cancerous vegetations could, under the influence of fulguration, become covered with normal granulations and the cancerous growths appear as if burned, and become covered with a cicatrix, but this cicatrix would only hide the growth and it would continue its evolution beneath it. The action of fulguration is purely local and even if all cancerous material be removed from the locality of the growth, those portions which are at a distance will not be affected by the treatment. The cases collected include cancers which have recurred, and which are at the limit of operability on account of their extent or depth. Some had recurred in spite of the fulguration. His work is based on 139 observations of Juge, Keating-Hart, Dubois-Trepagne, and his own personal cases. Cases reported less than one year after fulguration include ninety-two observations; of these twenty-nine recurred (Keating-Hart and Juge).

Of five cases of Dubois-Trepagne, one recurred in less than one year. Of forty-two cases treated by the author, thirteen recurred in the course of the first year. Of cases which were treated less than two years ago there were sixty-three from Keating-Hart and Juge with seven recurrences; of the author's twenty-nine cases, ten recurred. Many of these recurrences were metastatic, and could not have been affected by the local treatment. In all cases the relief from disease was longer than it would have been had only surgical treatment been used. Five cases recurred after five years. These five cases are still alive and the wound is cicatrized at present: they are now in good health. Cured cases dating from one year or more include twenty-four of Keating-Hart, ten of the author and four of other operators, a total of thirty-eight cases which remain cured after from thirteen to twenty-four months. Of cures of more than two years there are thirty; of those cured for more than three years there are five. The records include sixty-five recurrences and seventy-three cures. The author does not wonder that the proportion is not greater. In such severe cases it is difficult for the surgeon to tell whether his removal has been total. The final conclusion of the author is that fulguration enlarges considerably the field of surgery in cancer, by giving to it a chance of success in some cases in which it would be impossible otherwise to operate at all. It gives the patient a better chance of non-recurrence, and a longer respite from disease.

Diagnostic Value of the Uterine Sound in Cancer of the Uterine Body.—H. Violet (*Lyon méd.*, Nov. 13, 1910) says that hemorrhage, sanguineous leukorrhea, and watery discharge do not appear in early cancer of the uterine body. A sign that he thinks of great value is obtained with the flexible uterine sound used carefully and without any violence. While the sound may produce a small amount of flow when passing the internal os, it will not cause persistent and profuse bleeding after passing over the internal surface of the normal mucosa. If this does occur it is a valuable indication of the presence of cancerous tissue which is friable and bleeds easily. Another valuable sign is a feeling of roughness with the enlarged end of the sound. A slight grating noise may also be heard by an expert ear when the sound scrapes over the diseased surface. These two signs are of great value in the diagnosis of cancer of the body early enough in the disease to permit of successful operation.

Use of Corpora Lutea for Symptoms of Artificial Menopause.—C. A. Hill (*Surg., Gyn., Obst.*, 1910, xi, 587) has used extract of corpora lutea in doses of 5 grains three times a day in twelve patients from twenty-five to thirty-eight years of age from whom he had removed both ovaries and who showed very severe nervous symptoms. The nervous symptoms were completely relieved in every case. In only two cases was there complete relief from flashes of heat, in another case suffering from insomnia which started after her operation over a year before and had continued ever since and upon whom hypnotics gave no results, complete

relief was experienced after using fifty capsules, each containing 5 grains. One case reported a notable increase in sexual desire, while in the remaining eleven no noticeable change was experienced.

Traumatic Rupture of Pus Tubes Causing Diffuse Peritonitis.—As Bovée was able to find reports of only fifty-five cases in which rupture of a pus tube produced diffuse suppurative peritonitis, C. M. Echols (*Surg., Gyn., Obst.*, 1910, xi, 589) records two which he has observed. In both the pyosalpinx was chronic and he considered it without doubt of gonorrheal origin though no bacteriological examination was made. In both the tubal rupture was traumatic, in one case from rather violent coitus, in the other from extreme muscular effort, in each case a feeling that "something gave way" preceding nausea and signs of peritonitis. Since in about one-third of the fifty-six cases tabulated by Bovée the diagnosis was made only at autopsy, it seems probable that many others have been concealed under the diagnosis of peritonitis or appendicitis.

Röntgen Therapy of Uterine Myoma.—Franz Bardachzi (*Münch. med. Woch.*, Oct. 18, 1910) says that it has been shown by experiments on the ovaries of dogs that the Röntgen rays have a marked effect on the ovaries, causing atrophy of the Graafian follicles and primary follicles. The author gives histories of six patients in whom myomata were treated with this therapeutic application with good results. The growths were caused to atrophy, and the hemorrhages were controlled. Strong applications are necessary in order to get good effects. The author thinks that we should try the *x*-rays in all myomata, not reserving them for inoperable growths. They shorten the treatment materially and relieve both doctor and patient from a tedious course of treatment. If only a small number of growths are brought to a standstill, yet the symptoms are much relieved.

Uterine Bleeding of Ovarian Origin.—Kaji (*Monatschr. f. Geb. u. Gyn.*, Nov., 1910) says that in many cases of uterine bleeding an excellent reason is found in growths, whether benign or malignant pregnancy or abortion, or inflammatory disease of the endometrium. But there are some cases, either at the menopause or at the time of puberty, that seem to have no evident cause; formerly these cases were referred to supposed pathological conditions of the endometrium, which have now been shown to be normal to the climacteric. Benecke was the first who advanced the opinion that this bleeding depended on a functional derangement of the ovarian function. Under it the uterus underwent swelling and increase in the glandular substance, and bleeding resulted. Other authors have by their observations corroborated his views. Franz thought that there were changes in the nutrition of the ovaries, and degeneration of the Graafian follicles. Winternitz described thickening of the tunica albuginea, increase of connective tissue, destruction of the primary follicles, and degeneration of the blood-vessels of the ovary. Pankow maintained from

observation of forty-four cases that the majority of the ovaries showed no typical changes, and that the condition was functional ovarian derangement. The author made a systematic examination of ovaries in the Halle Frauenklinik in seven cases of which he gives the histories. Six of them were at the climacteric, one at puberty. No cause for the bleeding could be found in the uterus. In case of the six older women the uterus was removed with good results. In the seventh the enlarged right ovary was removed. The extirpated uteri showed no typical lesion, although not entirely normal. In the ovaries were several varieties of change, cysts, thickening of the tunica albuginea, etc. The bleeding resulted neither from lesions of the endometrium nor of the myometrium, but from derangement of the physiological function of the ovary.

Hematoma of the Ovary.—J. P. Hedley (*Jour. Obst. Gyn. Brit. Emp.*, 1910, xviii, 293) records eighteen cases of hematoma of the ovary, ten of which he has seen within eighteen months. He defines this condition as one in which the ovary is enlarged and contains fluid resembling old altered blood of a brown color and oily or tarry consistence. It is a disease of the child-bearing period of life in the great majority of cases. The youngest patient in this series was twenty-four and the oldest fifty-three; with these exceptions all were between the ages of twenty-eight and forty-eight and eight were unmarried and had never been pregnant. The average number of pregnancies among the married women was only 1.2. Hematoma of the ovary, and apparently the conditions which lead to it, are associated with a marked diminution in fertility. Menstrual disturbances of various types are common with hematoma of the ovary. Pain was the most prominent symptom in all but two of the patients. In seven the first symptom was a sudden severe attack of pain usually in the lower part of the abdomen accompanied in some cases by vomiting, retching or fever, followed by frequent or occasional ones of the same character at intervals varying from a few days to several months, or by severe dysmenorrhea or a continuous dull aching pain. In three cases the pain first came on at the periods and recurred at subsequent periods; in one of these, after some months of dysmenorrhea, the pain became constant. In the remaining six cases the patients complained of a persistent dragging pain in the lower part of the abdomen and back. The physical signs produced by hematoma of the ovary vary with the size of the collection of altered blood and the thickness of its surrounding wall, with the acuteness or chronicity of the inflammation and with the amount of peritonitis and cellulitis around the affected ovary. Many of the patients complained of tenderness in one or other iliac region or over the whole of the lower part of the abdomen. In some cases semi-solid tumors could be felt. Tenderness was acute in three cases, and the abdominal wall was held rigid over the tender area. On bimanual examination in all these cases, with the exception of three, in which the uterus was enlarged by

fibromyomata, swellings, varying from the size of a hen's egg to that of a cocoanut, were found in the pelvis. The fixation of these masses was a striking feature in all but two of the cases; in four the tumors could be moved to a slight extent, and in the remaining nine they were markedly fixed. In four cases there was evidence of inflammation of the pelvic cellular tissue. A hematoma of the ovary is always firmly fixed to surrounding structures by peritoneal adhesions. The disease may involve both ovaries or only one; in nine cases of this series the condition was unilateral, and in six bilateral, while in the remaining three both ovaries were probably affected. In six cases there were uterine fibroids. There seems no reason to doubt that the actual process of formation of ovarian hematoma is one of rupture of several or many Graafian follicles into one another, instead of on to the surface of the ovary separately.

Method of Exposing the Interior of the Bladder in Suprapubic Operations.—Howard A. Kelly (*Surg., Gyn., Obst.*, 1911, xii, 30) calls attention to the fact that the chief difficulty in reaching and exposing the bladder comes from the resistance experienced in drawing aside the recti muscles with their overlying fasciæ. The operator works at a great disadvantage in the lower angle of a rigid V, and may be obliged to cut the recti at the risk of subsequent hernia. To obviate this difficulty the writer has devised the following procedure: The patient is put in the Trendelenburg posture, after first emptying and cleaning out the bladder, and introducing a mushroom catheter large enough to fill the urethra. A semilunar incision is made through the skin and fat of the lower abdomen about 1 inch above the symphysis pubis, concave toward the umbilicus and about 6 inches long. A clean dissection of the upper skin and fat flap away from the deeper tissues is next made, when the deep fasciæ overlying the recti muscles and the adjacent oblique muscles out beyond the semilunar line are clearly exposed. The deep fasciæ are divided from side to side without cutting any of the underlying muscular tissues. The fasciæ are now freed from the muscles by blunt dissection with the gloved finger. In the median line, the detachment must be made by means of scissors or a knife. When the loosened fasciæ have been drawn up and down, the underlying flaccid recti muscle bellies are exposed and easily retracted to the right and to the left. An inflating rubber bulb is attached to the mushroom catheter in the bladder and squeezed so as to fill the bladder with air and to bring it up into the wound. The empty bladder is now caught by two guy sutures and incised in transverse direction between them, as recommended by Leguen. If the opening is carefully made, there need be no contamination, as the bladder is held up by the guy sutures. The opening is enlarged as much as may be necessary from side to side. Any infectious vesical contents can easily be dried out. The base of the bladder is brought perfectly into view and is easily accessible for all operative procedures. After completing whatever operation the circumstances of the

case may demand the operator closes the bladder with or without drainage, taking care to utilize the perivesical fasciæ in the outermost row of sutures. The abdominal wall is closed down to the little suprapubic drain if one is called for. By first uniting the recti with catgut and then uniting the deep fasciæ of the abdominal wall, leaving room in most cases for a small drain in the median line, the operation is completed.

Adenomatosis Vaginæ.—V. Bonney and B. Glendining (*Proc. Roy. Soc. Med.*, 1910, iv, No. 1, Obst. and Gyn. Sect., p. 18) record what they believe to be a unique case. The patient, a woman of forty-two, had had five normal labors, the last eight years ago. Menstruation was normal. For twelve years she had had a continual transparent sticky vagina discharge. The entire vaginal mucosa, including the vaginal surface of the cervix, was of a singular red color, and had a granular, finely honeycombed texture. It was studded all over with small cysts from the size of a pin's head to that of a large pea, and from it poured a continuous stream of mucosa fluid. The vaginal mucosa was covered with stratified epithelium reduced in many places to the thickness of a single cuboidal cell. Imbedded in the subjacent fibromuscular stroma were numerous glands lined by a single layer of actively mucinogenetic tall columnar epithelium. Some had been converted into retention cysts, others communicated with the surface of the vaginal mucosa. The writers discuss the possible origin of these glands from the ducts of Müller, from the Woffilan tubes, or by metamorphosis, inflammatory or reversionary. They believe that in this patient a congenital peculiarity of the cells lining the vagina existed, in virtue of which they possessed facultative gland-forming powers similar to those covering the vaginal cervix in immediate proximity to the external os; and that this power lay dormant until activated by an excitant, probably inflammatory and connected with child-bearing, the process being analogous to that by which a glandular erosion of the cervix is formed.

Intraperitoneal Hemorrhage in Cases of Fibromyomata of the Uterus.—A. J. Wallace (*Jour. Obst. Gyn. Brit. Emp.*, 1910, xviii, 357) records the case of an unmarried woman, thirty-one years of age, who, after hurrying to a train, was seized with severe abdominal pain, vomiting and weakness. Ten days later these symptoms recurred upon sitting up in bed and vomiting followed any movement. A hard rounded tumor was felt in the lower part of the abdomen the whole of which was distended and tender. About 6 ounces of blood were found in the peritoneal cavity and the removed uterus showed bleeding from a ruptured varix communicating with a superficial vein. The writer reviews seventeen cases in literature with a mortality of over 35 per cent. These are of three types: 1. The *acute*, in which the shedding of a large amount of blood is followed by a severe peritoneal crisis and general collapse. 2. The *subacute* or *chronic*, in which small or very moderate amounts of blood are shed at

intervals, evidenced by mild signs of peritoneal disturbance of short duration, or by advancing anemia that is not explained by external losses or by general disease. 3. Cases in which intra-peritoneal bleeding occurs without evidence of its existence. In such cases the bleeding may have been provoked by some exertion on the part of the patient immediately before transport to the operating-room, or while actually on the way thither, or perhaps by struggling during the earlier stages of anesthesia.

Backache in Women.—Alfred de Roulet (*New Orleans Medical and Surgical Journal*, February, 1911) in a very practical paper says: In women, backaches occur in connection with rheumatism, neurasthenia, neuralgia, spinal troubles, as caries and fracture, relaxation of the sacro-iliac articulation, the various pelvic inflammations and congestions, constipation, hemorrhoids, pendulous abdomen, etc. The ache varies from an occasional muscular soreness to a continuous pain so severe as to be almost unbearable. It may be localized in a small area over the sacrum, in one or both sacro-iliac articulations, in or about the coccyx, over the lower lumbar vertebræ, or it may involve the entire sacral, lumbar and lower thoracic regions. Many backaches in women are undoubtedly rheumatic in origin, but more are neurasthenic. In young women improper or unsuitable footgear is a prolific cause of backache. The change from the broad, flat "spring heels" of early girlhood to the stilt-like French and Cuban heels of flighty adolescence seriously disturbs the normal poise and balance of the body, and, until the muscles of the back and legs have adapted themselves to the changed conditions, severe backaches and legaches are to be expected. Again, the unstable equilibrium afforded by the high heels keeps up a muscular and nervous strain very conducive to backache. Among women of the poorly-nourished, hard-working type, an intrinsic weakness of the muscles of the back is a common cause of suffering, the distress being greatly increased by long-continued or fatiguing effort. In the acute infections, backache is usually present in varying degrees of severity, while an exceedingly persistent and distressing pain often occurs in connection with spinal caries, certain spinal curvatures and in the crises of locomotor ataxia. While backache is very common in all forms of pelvic disease, I am inclined to attribute this symptom to an impairment of the patient's general condition rather than to the pelvic disorder. The rheumatic backaches are fairly characteristic. There is usually a history of previous acute attacks. The pain comes on suddenly following exposure to cold or damp or after some unusual exertion. The pain is usually worse at night, and may be excited by pressure on the affected muscles or by such postures as will render these muscles tense. The pain subsides rapidly under friction or massage and as the result of exercise. Strains and subluxations of the sacro-iliac articulations produce a backache of an entirely different type. It should be borne in mind that these articulations

are true joints with, normally, a very limited but definite range of motion, the mobility being decidedly increased during pregnancy and to a less extent during menstruation. Excessive mobility may be due to injury, arthritis, or to a general weakening of the muscles and ligaments. The symptoms vary with the degree of relaxation. In extreme cases the patient is practically helpless, while in the mildest cases it is only during pregnancy, or possibly menstruation, that there is any noticeable discomfort. The majority of these patients complain of pain over the sacrum, which may or may not be more or less localized over either or both articulations. The pain often radiates downward along the course of the sciatic and internal pudic nerves, and is increased by any physical exertion carried to the point of fatigue, or by any movement involving the sacro-iliac articulations. It is usually worse at night, as long-continued rest on the back involves a certain flattening of the lumbar spine. To this cause also may be traced a large proportion of the postoperative backaches. On examination, the attitude of the standing patient is quite characteristic. The lumbar curve is distinctly flattened, and where the relaxation is more marked on one side than on the other a slight lateral curvature of the spine may be present. Any movement of the spine affecting the sacro-iliac articulation is both limited and painful. For example, a standing patient bends forward only with the greatest difficulty, but, with the patient seated and the pelvis supported, the body may be bent forward with ease. With the patient sitting and the knees bent to relax the hamstring muscles, the back has about the normal mobility, but the movements become both difficult and painful as soon as the knee is extended. On palpation there is tenderness over either or both articulations, and sometimes, though not always, it is possible to demonstrate excessive mobility. In many cases of chronic sprain there may be present very severe symptoms without appreciably increased mobility. The pain of coccygodynia is localized in and around the coccyx. In most cases the patient is not only rheumatic or neurasthenic, but there is also a history of injury, as a blow or fall upon the coccyx, preceding the onset of the trouble. In elderly primiparæ it is possible that the pain may be traced to coccygeal injuries incident to childbirth, but as a general rule parturition is a factor of very little importance. The pain usually comes on gradually and varies in intensity from a slight dull aching to an acute agony. Cases of moderate severity are comparatively common, while the aggravated cases are, fortunately, rare. The pain is frequently of an intermittent neuralgic character, but more often is continuous, though the suffering may vary in intensity from day to day. The distress is always increased by sitting down or getting up, and is almost always increased by walking or moving about. Defecation is likely to be very painful. As a rule, the pain is much worse during pregnancy than at other

times. In the interval between the acute attacks the painful paroxysms may be exactly reproduced by manipulating the coccyx. In backache due to intrapelvic disorders there is pain and tenderness of varying intensity across the lower lumbar vertebræ. It is not appreciably affected by movement or change of position, it is not relieved by exercise, and is decidedly increased by fatigue. As a matter of course, the treatment of backache depends entirely on the correction of the underlying causes. If the backache is due to neurasthenia, the treatment is essentially hygienic, and recovery can result only from proper food and rest, with such medication as may be necessary to stimulate digestion and to control disagreeable symptoms. Iron, strychnin, arsenic, and phosphorus are all useful. In rheumatic and gouty conditions, hygienic measures are of great importance, but diet should be restricted, pork, veal, turkey, rich gravies, pastry, made dishes, malt liquors and sweet wines being entirely omitted. The patient should be encouraged to drink large quantities of pure water, and for this purpose the various "Lithia waters" are often highly recommended. The amount of lithia contained in any of these waters is so small as to render the possibility of any therapeutic effect an absurdity, but the amount of water taken floods the kidneys and provides the body with necessary fluid. Massage, when properly employed, is of the greatest value. The patient should lie flat on the abdomen on a table or hard mattress, so that the force applied will be expended on the aching muscles and not dissipated by a soft, yielding bed. The painful spots should be located and systematically kneaded, the force being moderate at first, but gradually increasing to a maximum. At first only the finger tips are used; later the whole hand. The kneading is followed by percussion, in which the muscles are struck with the edge of the open hand, the strokes being from the wrist, and should be rapid—light at first, but gradually increasing in force, the force depending on the duration of the trouble, the amount of subcutaneous fat, and the muscles involved. In kneading the lumbar muscles, the operator works to the best advantage on the same side as the structures under treatment. In percussing he works best across the patient. The treatment should be repeated daily; at first a seance should not last over ten minutes, but later may be lengthened to twenty minutes. There are few backaches due to rheumatism which will not readily yield to this treatment. In many patients the local application of heat is beneficial, and for this purpose a very convenient device is a 100 c.c. incandescent bulb fitted with a highly polished parabolic reflector, both bulb and reflector being mounted in a metal hood and suspended from a swinging crane. The treatment is applied daily, each application lasting from ten to fifteen minutes, the light being constantly shifted over the exposed skin to avoid blistering. Where the skin is delicate a wet towel may be interposed as a

slight protection. The beneficial effects of this treatment are due entirely to the heat. With an incandescent bulb fitted with the carbon filament, there is practically no actinic effect, as the glass of the bulb acts as an efficient ray filter. Using the arc light, a full actinic effect is obtained, and a slight chemical effect is possible with the tungsten light. A decided progressive improvement of the patient's condition usually follows the use of the thermal lamp. As regards the medicinal treatment, the author finds a combination of potassium iodide and wine of colchicum root in syrup of sarsaparilla compound of considerable value in promoting recovery. In backache due to relaxation of the sacro-iliac articulations, treatment by rest and support is by all means the most efficacious. A ready method of securing this rest and support is by strapping the pelvis across the sacrum and just above the great trochanters. The compression should all be below the level of the iliac crests, as pressure along the crests would tend to separate the articular surfaces. In applying the straps they should be drawn tight *toward* the median line of the sacrum. A properly moulded and judiciously padded leather belt across the hips may be worn as a more convenient but less efficient substitute for the strapping, and in mild cases is often all that is necessary. Occasionally cases are encountered where there is an actual subluxation of the joint. These cases resist all treatment until the spine is strongly extended and the subluxation is reduced, after which the pelvis is supported and immobilized in a plaster Paris dressing. In sacro-iliac backaches, long standing should be avoided and a correct attitude should be maintained. When lying down, a small hard pillow or cushion should be placed under the hollow of the back to support the lumbar spine. When sitting, lounging should be avoided. The general condition and the balance of the body, as affected by high heels, should be considered. Coccygodynia due to local causes, such as fracture, dislocation, laceration of the coccygeal ligaments, osteitis or necrosis, is amenable only to operative treatment. A much less common form due to general causes is occasionally encountered in which no palpable local lesion is present, and where the trouble seems to be due to rheumatism, gout, or possibly to some hysterical or neurasthenic condition. Under these circumstances, the constitutional trouble should receive appropriate treatment, while local treatment should be directed to the relief of the coccygeal pain. Suppositories of opium, belladonna and iodoform, and of belladonna and iodoform have been used with good results, but more often have proven entirely worthless. The same is true of ointments of aconite and belladonna, and of veratrine, which are rubbed into the skin over the coccyx and lower portion of the sacrum. The actual cautery is the only certain remedy for the relief of the local pain, and, on account of the apparent brutality of the method, is resorted to with great reluctance. In applying this treatment a narrow strip of skin is deeply burned from the first

sacral foramina on either side downward to the tip of the coccyx. By using a Paquelin or a narrow-pointed cautery iron heated to a white heat, the actual application is not particularly painful, and the relief is immediate and often permanent. The burn is dressed with gauze moistened with picric acid solution.

Construction of a Vagina.—In recording three cases in which he constructed a vagina from a resected portion of the intestine W. L. Wallace (*Buff. Med. Jour.*, 1911, lxvi, 364) suggests several modifications of the method described by J. F. Baldwin in the *AMERICAN JOURNAL OF OBSTETRICS*, November, 1907. In using the ileum for the vagina, instead of bringing down the middle of the gut, stitching it to the vulva and opening it, after the manner of Baldwin, the writer would bring down the opened ends of the gut and sew them to the vulva, leaving the closed end of the folded gut to form the roof instead of the entrance to the new vagina. This would save the necessity of closing and turning in the two ends, which procedure takes time and also uses up nearly an inch in length at each end. It also saves the necessity of opening the folded end to sew it to the vulva. Of course while being drawn through the perineum, the ends would be properly protected, as would the open end of the sigmoid. This method would also make a smooth roof for the new vagina and would make the application of the clamp much easier, as the full length of the septum would be cut out. The intestine should be drawn down until the mesentery is taut, so that the new vagina will not prolapse; and any surplus mucous membrane should be cut away. Of course the mesentery must not be pulled down enough to interfere with the blood supply. Especial stress is laid upon the importance of selecting a portion of intestine with good blood supply.

Ureterotubal Anastomosis.—Axel Werelius (*Jour. Amer. Med. Assn.*, 1911, lvi, 265) presents a preliminary report upon ureterotubal anastomosis which he is trying in a series of dogs. This addition to the rather numerous modes of disposing of the divided ureters is offered as a solution of the problem confronting the surgeon after removal of the bladder for malignant disease. The writer's operation presupposes localization of the neoplasm so that the entire genital tract may be left. He believes that secondary infection will be reduced to a minimum by anastomosing the ureters with the Fallopian tubes or uterus and that the lack of control will be somewhat counteracted by the favorable location for wearing a urinal.

DEPARTMENT OF PEDIATRICS.

ORIGINAL COMMUNICATIONS.

SPLIT PROTEIN FEEDING.

WHEY, CREAM AND SKIM MILK MIXTURES—ADVANTAGES—INDICATIONS—LIMITATIONS—ADAPTATION—WITH A SIMPLIFIED METHOD OF PERCENTAGE FIGURING.

BY

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THE difficulty in adapting the proteins of cows' milk to the stomach of the human infant admits of no argument. Curds in the stools are of daily occurrence, if one sees many babies. The question has been raised as to whether the little lumps, reported as curds, on casual examination by the nurse, may not often be particles of undigested fat or free fatty acids or their soaps with lime and magnesium.

These latter are small in size, of a yellowish tinge and the stool may have a rancid odor. A test as to solubility in ether determines, where doubt exists. So far the writer has found the apparent curds non-soluble in the large majority of cases—indicative of their protein composition.

There is a variety of mixed curd, however, which is partially but not entirely ether soluble. To determine whether some portion of the curd has been dissolved the ether may be evaporated upon a watch glass and remaining solids noted.

Curds appearing in the infant stool give proof that the child is either getting more protein than it needs, or that while it needs what it is getting, the digestive organs are unable, at the time, to handle the protein of cows' milk as it exists in the ordinary formula.

This latter condition is a serious one, for even though there should be a gain in weight there can be no true growth unless sufficient protein is assimilated. Fat and carbohydrates give energy, make steam for the human machine, increase the weight through formation of fat. Growth, however, must be in the cells of the various organs and tissues. These cell constituents are mainly protein and water.

The adult needs the proteins for cell replacement, but the infant is to double its weight in the first six months, to triple it in a year—therefore this food element must be sufficient for both replacement and growth.

Carbohydrates in excess may tend for a time to increase the size, but the scales are deceptive. The heavily over-weight baby, fed perhaps on condensed milk or proprietary foods, is in a different class from those mentioned above—able to handle proteins but not receiving them—fat but starving. Its state is almost as dangerous as the marantic condition—it is non-resistant, a puff of disease blows out the candle of life.

The proteins of breast milk and those of cows' milk differ in more ways than one, but one is worthy of notice. That protein which precipitates and forms a tough curd in cows' milk exists in far larger proportions than its soluble companions. While analyses vary much, the following proportion averages many:

Casein : Lactalbumin :: 14 : 3

In mother's milk note the marked difference.

Casein : Lactalbumin :: 2 : 3

When whey is made the casein is thrown down in the form of paracasein, the soluble proteins remain, the fat is largely eliminated. If to this whey, cream be added to bring up the fat, such cream naturally brings with it some casein and less lactalbumin, but the major part of the mixture being whey, an excess of soluble protein over casein may be maintained. In other words the proteins have been split and their ratio changed to conform much more closely to human milk. This in brief explains the basic idea of the method.

Southworth(1) gives an excellent definition of this manner of feeding: "It consists in increasing the amount of soluble proteins in an infant's food without increasing in the usual proportions the amount of casein."

In 1901, White and Ladd(2) published the result of exhaustive laboratory experiments on the combination of 32 per cent. cream, whey and fat free milk. Upon the principles and limita-

tions then laid down, laboratory preparation of these formulae was, and still is, based. A fact of especial interest was noted by these observers. "Whey-cream mixtures yield a much finer, less bulky, and more digestible coagulum than plain, modified mixtures with the same total proteins." Credit is given to Westcott(3) in this article for having suggested the whey-cream modification. The writer finds a paper by Bartley(4) which appears to antedate the work of Westcott. To Bartley, therefore, credit is apparently due for having introduced this method in America.

Last year Koplik(5) wrote: "The method has not yet come into vogue for the reason that physicians have not as yet accustomed themselves to the theory of preparing these solutions."

It would seem that at the present time the splitting of proteins has not attained to the position in infant feeding to which it is entitled, certainly not with the general practitioner, who feeds the large majority of babies.

The writer has practiced this rearrangement very constantly for a number of years and believes that it is entitled to wide consideration. The fact that he has fed his own infant son for the past six months in this manner, speaks for itself. The result in the case is as was expected—satisfactory development, regular increase in weight, smooth yellow stools, no vomiting. The baby has been in the happy position of one who doesn't know he has a stomach except when hungry.

The scientific feeding of infants is not an altogether easy proposition—when such feeding includes the rearrangement of the proteins it has been still more complicated. If the practitioner, by the very smallest tax upon his memory, could be in a position to figure his fats, dissect his proteins, and bring up his sugar—all this by a moment's mental arithmetic—he would add a most valuable weapon to his armamentarium and very precious little lives might be conserved. The major purpose of this paper is to point out a simplified method to this end.

It might seem that the desirable change in protein proportions would produce mixtures suitable for feeding all through the first year. This is not so, however, for well-defined reasons, which will become more clear when the analysis of whey is considered.

Analyses of this fluid vary greatly as published; a part of the variation apparently is due to differences in the manner of making.

ANALYSIS OF WHEY.

	Water	Fat	Sugar	Proteins	Ash
Bartley.....		.3 to .4	4.9	.85 to .90	.5 to .6
Fleischman.....	93.15	.35	4.9	1.00	.6
Koenig.....	93.38	.32	4.79	.86	.6
Smetham.....	93.38	.24	5.06	.88	.49
Richmond.....			5.00	1.00	.6
Veith.....	93.01	.09	5.45	.92	.54
Monti.....		1.00		.85	.68
Van Slyke.....	93.00	.33	4.8	.86	.7
Hutchinson.....	93.64	.29	4.65	.82	.65
Average of the above.....		.37	4.94	.90	.60

The addition of cream brings with it nearly five times as much casein as lactalbumin. The excess of the latter over the former, such as exists in human milk, will cease to be operative when the total proteins of the mixtures reach about 1.5 per cent. Two per cent. or thereabouts is reached by sacrificing lactalbumin, still, of course, with advantages over ordinary formula as to digestibility. As formulæ go higher in the proteins the amount of diluent becomes small and whey addition loses its larger affectiveness.

Two per cent. of the proteins of breast milk will nourish an infant well toward the end of the first year, the same amount of cows' milk proteins will not. There is a difference in the proteins with a resultant difference in assimilation. The baby who is fed upon cows' milk must gradually become used to the normal cow protein. Split protein feeding has therefore limits approximating the first half of the first year for healthy infants—but this is the most important period, from the feeding point of view. Disorders of nutrition and illness give indications for the latter portion of the year. A marantic baby of eight months may have only the digestive ability of the normal child of three months. Attained age, in fact, is a broken reed upon which to lean in modifying milk for the needs of any infant. Development, weight, character of stools, character of vomiting, if present, and digestive history are the factors for consideration.

A further limitation in the preparation of this class of mixtures is the fact that more time is required, also ordinary horse sense. A woman who has to take care of the baby, attend to the wants of several other children, do all the house-work and take in washing to support her husband, hasn't the time. Suffragettes, Christian Scientists, et al, haven't the horse sense.

An essential point in the handling of this method of feeding is that the physician should give clear directions for the making of whey and insist that these instructions be carried out in detail.

It makes a considerable difference in fats, for example, according to whether whey is made from whole milk or that which is largely fat-free.

The cream, upper 5 ounces, is removed from the bottle with a Chapin dipper, mixed and put aside; to the remaining milk essence of pepsin, Fairchild (ordinary essence generally fails) is added in the proportion of a teaspoonful to the pint. The milk is warmed to blood heat, 100° F., and kept about at that temperature until the curd has formed (usually ten or fifteen minutes). The curd is cut into small pieces and the mixture heated, with vigorous stirring, to 155° F. It is strained while hot through a fine wire gauze coffee strainer, and when cold the cream or skim milk, or both, may be added. (6)

Several points are to be noted: Unless the mixture is brought to 155° F., the curdling ferment will remain active and the cream will curdle when added. A further precaution is the cooling of the whey before adding cream. If the whey be carried to a temperature above 155° the albumin will coagulate. After the removal of the top 5 ounces, 27 ounces remain; this gives 20 ounces, or less, of whey.

If the original bottle had the average fat content, 4 per cent., and the cream had risen, the upper 5 ounces will show about 20 per cent. fat. Some little cream having been left in the bottle, the whey should contain around .50 per cent. fat.

It is to be noted that certified milk averages richer in fat than the ordinary article. This is certainly true of the supply reaching Kings County, where the writer receives weekly analyses of the products of the various dairies. A fat content of between 4 and 5 per cent. is usual, between 5 and 6 per cent. quite frequent. It is wise to treat certified milk as averaging 5 per cent. and to remove the top 6 ounces to obtain a 20 per cent. cream.

To employ the whey cream and skim milk mixtures according to the recent method of the writer, the practitioner, being familiar with the manner of making whey, has but two other things to remember; first, the average percentage composition of whey, which may be put down as

Fat	Caseinogen	Whey proteins	Lactose
.50	0	.90	4.90

The second matter for remembrance is the following:

Rule.—In a 20-ounce quantity of whey the replacement of

1 ounce by 1 ounce of 20 per cent. cream will add F. 1 per cent., C. 0.14 per cent., and will subtract .02 per cent. (actually .015 per cent.) from whey proteins. The replacement of 1 ounce whey by 1 ounce skim milk will similarly affect the casein and whey proteins, leaving the fat unchanged.

The above is based on average analyses of milk showing casein 2.81 per cent., lactalbumin .60 per cent. Skim milk is figured at .50 per cent. fat.

It is obvious that sugar, being of about the same percentage in whey, cream and skim milk, will be unchanged in these replacements, remaining at practically 5 per cent. Such percentage is low for the infant. It is handy to remember in constructing any kind of formulæ that a *rounded* tablespoonful of milk sugar weighs about 1/2 ounce and adds 1.5 per cent. to the quart (actually 33 ounces) of mixture. Two-thirds of a rounded tablespoonful will therefore bring any of our 20-ounce mixtures to 6.5 per cent. sugar. If 7 per cent. be desired, a little less than a tablespoonful, actually 13/15, may be added. A 20-ounce mixture is a convenient basis on which to figure. As the infant's needs increase, the use of a quarter more of each ingredient will give 25 ounces—a half more 30 ounces, etc.

It is very simple to figure the desired formula with the rule in mind. A few examples:

	Fat	Casein	Whey protein	Total protein
Whey to make 20 ounces with				
1 ounce 20 per cent. cream.....	1.50	.14	.88	1.02
1 1/2 ounces 20 per cent. cream..	2.00	.21	.87	1.08
2 ounces 20 per cent. cream.....	2.50	.28	.86	1.14
3 ounces 20 per cent. cream.....	3.50	.42	.84	1.26
Last formula above with				
1 ounce skim milk.....	3.50	.56	.82	1.38
4 ounces skim milk.....	3.50	.98	.76	1.74
6 ounces skim milk.....	3.50	1.26	.72	1.98

Keeping the composition of whey in mind, one has only to mentally substitute enough cream to bring the fat to the desired percentage, then enough skim milk to bring up the casein to the point of probable toleration, figuring .14 added to casein, .02 subtracted from whey proteins for each ounce of cream or skim milk substituted.

It may be noted that the formula showing C. .56, Wp. .82 gives practically the same arrangement of proteins as are found in breast milk.

To those who have in mind the ordinary modification of milk,

the total proteins in these formulæ may seem high for the early weeks of life. The baby, however, takes around 2 per cent. protein from the breast, even in earliest days. While cows' milk and breast milk are as different as two methods of discovering the north pole, yet this manner of protein rearrangement allows a large total. The youngest, or even premature, infant can take whey; these formulæ show whey plus casein in delicately controllable quantities. The premature infant, breast milk unavailable, may start with diluted or pure whey and have its fats and casein gently shaded upward by quarter-ounce substitutions.

A very general idea of the application of the percentages in normal infants is all that can be given and the ages mentioned must be considered as anatomical and physiological rather than chronological.

A day or two after birth F. 1.00-1.50, C. 7-14 may be properly indicated; in a week or so F. 2.00, C. 21. Second month, F. 2.50, C. 28-42. Third month, C. .56-.70. Fourth month, F. 3.00, C. 84-98. Fifth and sixth months, F. 3.00-3.50, C. 1.12-1.26. Whey proteins will naturally take care of themselves, reducing as casein is advanced. Sugar at 5.00 in first week or so; 6.50 to 7.00 later. Early in the seventh month a shift may be made to the ordinary method of modification, with an undivided protein content of 1.75 per cent. (practically equivalent to 1.45 per cent. casein .30 lactalbumin). This is increased in a week or so to 2 per cent. (equaling 1.65 C. .35 L.). Thence feeding is carried on at the common rate of increase.

The rule given above has several advantages—it not only enables the physician to build up, with a moment's mental arithmetic, a suitable amount of fat, casein and whey protein, but it indicates at the same time the formula to be given to the mother. So much cream, skim milk and whey. Moreover, the rule works both ways. Should another practitioner have fed the child in this manner the percentages of fat, casein, whey, protein and sugar can be immediately figured from the materials used.

The method appears to have advantage over protein splitting by the use of whey and cream alone. The casein is under better control—may be added in quantities of .14, .07, or even .035 per cent.; this and the fat may be varied by the physician, with no additional trouble or confusion on the part of the person who prepares the mixture, since only one strength of cream is employed.

In the whey and cream mixtures, unless a considerable number

of formulæ and their percentages be carried in mind, one is at a loss, for the figuring is complicated. In the system suggested the practitioner is at once put in the position to make his own calculations, with only the remembrance of a few points.

Rotch(7) gives laboratory limitations in split protein feeding as follows: "Possible combinations of proteins where the percentage of fat in the food varies from 1 to 4 per cent. and that of sugar from 4 to 7 per cent.

Whey proteins, per cent.	Casein, per cent.
0.25	0.15
0.25	0.25
0.50	0.25
0.75	0.25
0.75	0.50
0.80	0.25
0.80	0.50
0.80	0.75
0.80	0.60
0.80	0.90
0.75	1.15
0.60	1.25"

It is to be noted that some of the steps are of .25 per cent. casein. While many infants will accept this, yet in a considerable proportion there is some vomiting or spitting up of food for several days. A fair criticism of the above combinations would be that, while good, they lack in flexibility.

Laboratory preparation of food, however, has one very distinct advantage—the percentages are accurate. If, for example, a 3 per cent. fat be ordered it will be received at 3 per cent. Home modification cannot be exact, no matter how carefully done, on account of the variation in milk.

Whey in itself is of much value as a temporary food in illness and has more calorific value than albumin or barley water. It must be strengthened if its use is to continue for more than a few days. Where stimulation is indicated a sweet California sherry can be added to the whey.

An infant may be presented who has been fed upon milk as ordinarily modified, but whose proteins have been entirely too low. The considerable increase indicated will cause indigestion unless spread over a period of time. The infant needs more proteins at once. If it be desirable to continue the same manner

of modification, some ounces of whey may replace a similar number of ounces of water in the daily food quantity. This can again be replaced ounce by ounce, at intervals of a few days, with milk, or with skim milk if fat increase is undesirable.

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469 CLINTON AVENUE.

HYSTERIA IN CHILDREN.*

BY

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HYSTERIA in girls at puberty is so common that it could be of little interest either to pediatricists or neurologists, so that I will confine myself to the discussion of those cases that have come under my observation in children under twelve years of age. Ever since I have become especially interested in hysteria in early childhood I have been persuaded that the subject is of far more importance than we have been accustomed to consider it. In fact, I believe that most of the hysterical phenomena observed in later life have their foundation laid long before puberty.

Hysteria has long been described as a child-like disease, symptoms that simulate childishness persisting in the adult. At the same time pediatricists have believed it to be of rare occurrence in children. One authority says: "Hysteria is a rare disease of early life, and is usually seen in children of the school age, especially girls at puberty" (Chapin and Pisek). Another: "This is not a disease of childhood, but one which is occasionally seen in early life" (Holt). "It is [not a true

* Read before the Harvard Medical Society, January 28, 1911.

disorder of childhood" (Koplik). "It is a rare disease in children" (Rotch). "In my experience children rarely simulate disease" (Fisher).

With these authorities my experience leads me to differ. In the last few years I have seen many children whom I have believed to be suffering with various forms of hysteria. On looking over our case records, I find that in the last year we have had fourteen cases which we have diagnosed as hysteria. Others might have classed some of these cases as neurasthenia, tic with nervous symptoms, or simply nervous children. The symptom-complex which I found to be most common and upon which I have founded my diagnosis is as follows:

1. Anesthesia of the cornea and pharynx.
2. Pain areas or zones of hyperesthesia.
3. Abnormalities in muscular control, either a paralysis or its opposite, increased muscular contraction of a given group of muscles as in tics, habit spasms, or hysterical convulsions. I consider paralyzes and these various kinds of muscular spasms to be different forms of the same group of abnormal muscular functions when caused by suggestion or autosuggestion.
4. Increased susceptibility to suggestion.
5. A sudden change of disposition commonly taking the form of fears.

Of course there has been much discussion of what hysteria really is. We get a better understanding of it when we look upon it as a disorder caused by suggestion in which ideas control the body. This suggestion may come from without or from within (autosuggestion). An hysterical subject is one who is easily influenced by suggestion. Charcot and his followers could make in their hysterical patients any symptom-complex they desired. By pressing upon a given zone certain definite seizures could be brought on at will when the patient knew what was expected of him. An hysterical paralytic could be educated to have areas of anesthesia which did not correspond to the distribution of the sensory nerves. Such anesthesia is an example of suggestion from without. This same hysteric may have had experiences or ideas originating within which have caused him to suggest to himself the original paralysis. To take an illustration in childhood: A child may have witnessed a convulsive seizure in an infant or an epileptic. This has made a great impression upon him, and if he be a proper subject for suggestion, or hysteria, the idea is borne in upon him until in

some moment of stress he is able to simulate the convulsion with more or less accuracy. Children are great mimics as all the commoner acts of life are learned and acquired by copying others. Therefore, they are even more susceptible to suggestion than adults.

However, they are less liable to the more complicated forms of hysteria because they do not understand and comprehend them. The adult associates anesthesia with a paralysis and therefore simulates the two together, while the child comprehends only the paralysis. So in children anesthesia rarely accompanies hysterical paralysis, unless the patient is educated up to it by repeated examinations on the part of the physician. Anesthesia of the cornea and of the pharynx however is common in most of my cases because children can understand that more easily and because I have made routine examination for it and in many instances educated the patient to a marked proficiency in this phenomena. Pain is easily understood by children; in fact it is a part of their early education when the parents themselves are neurotic, so that localized areas of pain and tenderness are frequently found in hysterical children.

As an instance of hysterical pain I may cite the case of F. J., which has a very profitable lesson to all of us. She was a girl of six and a half years of age. She had complained of abdominal pain and upon repeated examination of the surgeon she was educated to pain and tenderness over McBurney's point. This was so persistent that appendicitis was diagnosed by a very conscientious surgeon of my acquaintance, and a normal appendix was finally taken out. I saw her six weeks later and upon eliciting a careful history I found that she had always been a nervous child, but that in the last few months she had developed hysterical mental symptoms. She was afraid of the dark, afraid to go out alone upon the streets as she had formerly been accustomed to doing, and had various fears.

Upon examination I found that she had an absolute anesthesia of the cornea and pharynx, and that there were areas of pain and tenderness in different parts of the body as well as over the appendix region. The appendix tenderness remained together with that of the other so-called zones, and the operation had failed to relieve her principal symptom. My treatment consisted in separating her from her mother and under proper conditions she promptly recovered from her mental symptoms and her pain. This little child of six and a half years could not understand that

an operation ought to relieve her of her pain and therefore was not benefited by it as an adult might have been.

This case also illustrated the fears which are one of the commonest symptoms of hysteria in children. Some of my dispensary patients, children of the street, suddenly developed a fear of going out of sight of their mothers. One little girl of six became terrified at the sight of a cat which had been her pet for over a year, while another would not be left alone in the dark although she had formerly been accustomed to going to sleep without any light in the room.

Tics or habit spasms have interested me particularly because they are so often seen in early childhood and because they have so seldom been attributed to hysteria. They ought also to interest us all because they so frequently persist in adult life, as in the case of a well-known lawyer in another city who in his most serious moments is given to a very humerous wink of one eye. In most of my cases of tic I have been able to find some other hysterical manifestations.

To cite a case in point: F. Q., nine years of age, has always been irritable and of a nervous disposition. He is finicky about his food and has never even tasted butter, potatoes and other staple articles of diet. In the last two months he has been making a funny squint with his eyes and constantly crossing his fingers in a manner which is difficult to imitate. Upon examination he showed an absolute anesthesia of the cornea and pharynx, but no anesthesia elsewhere and no pain areas.

Another patient, A. B., four and a half years of age, had always been nervous also. In the last six months she had been afraid to be alone, although formerly accustomed to it and had developed various tics one after the other. She also had anesthesia of the cornea and pharynx. The first tic was a laryngeal one simulating a long and rasping clearing of the throat. She was a child of exceptionally sensible parents whom I made to understand the nature of her malady. She was also accustomed to obey, a rare attribute in hysterical children. This habit of obedience was exercised to its fullest extent and she was forbidden the luxury of her tic with the result that it stopped at once. However, she shortly developed a spasm of the forehead and eyelids which ceased with the same treatment, accompanied, I am sorry to say, by a threat to take her to a specialist whom she had particular reason to dread. Later a tic which consisted of pressing upon her epigastrium with her right forefinger resulted in sending

her away to the seashore where an out-of-door life, many new playmates, and an entire change of surroundings made her a normal child for the time being at least.

I do not deny that many tics have their inception in organic disturbances. For instance, this child may have had a mild pharyngitis or an irritation of the lids or epigastric discomfort which originated the idea; at the same time, she had an increased susceptibility to suggestion and therefore slight stimuli caused these manifestations of hysteria.

I have cited these cases which show the most common characteristic of hysteria in children, namely, pain areas, anesthesia, fears, and change of character and tics. However, children may simulate any abnormal condition that they can understand.

Many cases of hysterical aphonia have been reported and they are easily diagnosed in childhood because unlike the adult the child cannot carry out the deception with the proper details. They do not make any effort to speak, the lips and other organs of speech do not move. They show an absence of paralysis of the vocal cords by crying or laughing.

A. S., eleven years of age, had always been a restless, nervous, peevish child and had had similar attacks (six in number) since eight years of age. Eleven days before he came to me he had fallen and bitten his tongue. This brought on one of his so-called spasms which consisted of contortions of the face, rolling his eyes about in a strange manner and tossing his arms from side to side. From that moment he ceased to talk and he did not make a sound with his vocal cords except once in a while at play he laughed heartily and loud. He was very bright mentally and very much interested in all that was going on about him in the clinic. He was also happy in the fact that his peculiar abnormality had prevented his attendance at school. A pretended operation on the throat did not improve his condition, partly perhaps because the suggestion was not complete after he had observed the winks and smiles of some of the assistants. We advised the administration of an anesthetic which only resulted in his disappearance from the clinic. I did not see him again until four months later when he returned in answer to a summons. Then I found that after six weeks of mutism speech suddenly returned while being instructed in the art of phonation by some boys of his own age.

The extent in which these hysterical children are open to suggestion is deserving of attention.

D. L., eleven years of age, the only child of a neurotic mother, was seized with pain in the ankles and shoulder. Fearing rheumatic condition was the cause of her trouble, I examined the heart repeatedly at each visit. Thus having this organ called to her attention she soon acquired a pain over the precordia which was so severe as to keep her awake night after night. She elected to stay in bed and did not get up voluntarily for four weeks. In the meantime examination of the arm brought on a simulated paralysis of that member without anesthesia, which, however, remained but two days. An examination of the back made it the seat of her pain, in fact, it seemed as though I could at will cause by suggestion any pain or symptoms I wished. She was properly trained to have anesthesia of the pharynx. As is usual in such cases it was difficult to persuade her mother to allow her sick child to be separated from her, but when I did finally succeed in getting her to Atlantic City with relatives all her symptoms disappeared within two days.

The etiology of hysteria is more easily understood when approached from the pediatric standpoint. The pediatricist sees the condition develop oftentimes early in childhood and watches its progress to adult life, powerless to stop its course. Heredity plus environment are often too great a combination to combat with any success. The mother herself is usually neurotic. Fearing disease she instils it into the minds of her children who furnish a fertile soil for suggestion through the neurotic tendency they inherit. Perhaps it might seem, from the fact that the mother is so frequently the source of hysteria, that environment is the greater factor of the two, but it is not uncommon to see a hysterical child of a placid nonneurotic mother. Here the heredity may be traced to other members of the family, for it is rarely found lacking. This of course brings us to the cause of the latent tendency to hysteria which is not at all clearly understood at present, and therefore not worthy of discussion.

The treatment I have spoken of throughout my paper. It is suggestion skillfully applied to each individual case. To meet with any success one must be fond of children and understand them. It is useless to undertake the treatment of an hysterical child unless the conditions can be made favorable. This usually involves the separation of mother and child. A complete change of surroundings is far more effective with children than with adults, because children forget more easily. Their curiosity stimulates them to new thoughts more quickly, and old ties are

soon cut off. As to the permanence of such treatment, that largely depends upon their later environment. If the parents can be made to understand the true nature of the disease and the danger of relapse under unfavorable conditions, much can be done to prevent its return. This is often accomplished by the cure of one train of symptoms. The parents formerly doubting the correctness of your diagnosis marvel at the cure you have made. It gives them an insight into the strange workings of the human mind and then they can help you to guard against a future attack. When we are successful in our treatment we may have the satisfaction of knowing that we have saved one individual from a life of hysterical slavery.

432 WEST 154TH STREET.

CHRONIC INTESTINAL INDIGESTION IN CHILDREN.*

BY

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THE occurrence of numerous cases of chronic intestinal indigestion during the past year, in the practice of the writer, and the fact that wrong diagnoses had been made by other physicians in many of these cases, have acted as an incentive to the production of this paper.

These cases will not be reported in detail, but references will be made to those presenting unusual features. In two cases, both females between six and eight of age, repeated eclamptic seizures occurred which in both instances had been diagnosed as epilepsy by the attending physicians. These patients fully recovered and no eclamptic seizures recurred. One case presented typical symptoms of "petit mal" and was diagnosed as such by the writer and a neurologist. The previous history of this patient is of interest inasmuch as two years previously she had suffered from cerebral hemorrhage occurring as a complication of whooping-cough with complete right-sided hemiplegia, deep coma and beginning paralysis of heart and respiration from which she completely recovered. The attacks of "petit mal" ceased as soon as the chronic intestinal indigestion was cured. In another case laparotomy had been insisted upon by the attending physician for a supposedly "tuberculous focus in the

*Read before the Pittsburgh Academy of Medicine, Pittsburgh, Pa., January 30, 1911.

liver" or cholecystitis, although the patient who was three years of age had proved negative to all tests for tuberculosis. The patient recovered without laparotomy.

One of the most chronic forms of the disease occurred in a girl four years of age, presenting all the evidences of having suffered from a high degree of rachitis during early infancy. The abdomen would become enormously distended, due to absolute loss of tonicity of the intestinal musculature.

In only one case out of sixteen were the results disappointing and which was obviously due to lack of cooperation on the part of the parents. The patient drifted from the observation of the writer without having been benefited by any treatment.

Chronic intestinal indigestion is a condition frequently met with in children from four to twelve years of age. It probably occurs more frequently in females than in males. The disease is exceedingly common but on account of the variety of its symptoms is very often overlooked or wrongly diagnosed by physicians in general practice. Often these errors in diagnosis are the cause of needless anxiety on the part of the parents and also reflect seriously on the professional ability of the physician.

The cause of this malady may be directly traced to prolonged improper feeding and recurring attacks of acute indigestion. Almost all patients suffering from this disease are extremely nervous, often manifest some nervous disturbances, and it is quite probable that a neurotic disposition may be an underlying cause of this condition or at least afford a strong predisposition thereto. As a rule, these patients have received a diet containing an excessive amount of carbohydrates. It is a well-known physiological fact that the carbohydrates are entirely digested in the small intestine, that ferments are produced in comparatively small quantities in infancy and childhood and also that the length of the small intestines is comparatively shorter than in adults. Thus it can be readily comprehended that a systematic and prolonged overburdening of this important organ must inevitably lead to disastrous results. Irregular hours for meals and indiscriminate allowance of sweet cakes and candies by overindulgent parents, sooner or later bring about this unfortunate condition.

The disease usually comes on slowly. The patients gradually lose in weight or remain at a standstill for many weeks or months. They usually complain of being weary, especially upon rising in the morning. They sleep poorly. The appetite is capricious,

sometimes there is complete anorexia and then again these patients will eat voraciously. The tongue is coated, breath is offensive, and enlarged tonsils and adenoids are frequently present. The bowels are often constipated, sometimes diarrhea is present. The stools are usually offensive, contain undigested starch, fibers of meat and vegetables and mucus. These patients are usually irritable, nervous, and frequently pick at the nose. The complexion is usually sallow and sometimes distinctly icteric. Vomiting occurs occasionally. Frequently the patient complains of abdominal pain. As the disease progresses they become more and more emaciated and anemic, so that they present the picture of a beginning tuberculosis; in fact this diagnosis is frequently made in these cases. In addition to the nervousness we frequently have serious nervous phenomena—convulsions resembling epilepsy and “petit mal.”

The diagnosis after a careful examination of the patient is usually very readily made. The history of the case, prolonged improper feeding, the gradual loss in weight, coated tongue, abdominal distention, etc., should always lead to a proper recognition of the condition; nevertheless, we occasionally find that a diagnosis of tuberculosis, epilepsy or worms is made in these cases. Careful examination of the lungs and the usual test for tuberculosis will clear up this point. Epilepsy cannot be immediately excluded and there is a strong probability that true epilepsy may be traced to neglected chronic intestinal indigestion. Worms are excluded by examination of stools.

The prognosis is good, provided the patient receives the proper care and attention. Unfortunately, many of these cases are allowed to go on for years, without proper care and diet, until serious organic changes have been produced, or, on account of the feeble condition of the patient, he is unable to resist the onset of some intercurrent infectious disease.

The treatment is entirely dietetic. Too much faith is often placed in drugs. In the treatment of this disease, the administration of drugs wrongly chosen is more apt to be productive of decided injury than good. The judicious use, however, of a few drugs will assist materially in bringing about a cure.

The essential part of the treatment is diet and general management and intelligent cooperation of the parents or trained nurse. All starchy food must be stopped for a considerable time and the patient put upon an exclusive diet of rare beef or beef juice and milk. In some cases it is necessary to peptonize the milk, as the

casein of cow's milk is often difficult of digestion even for older children. Whey, kumyss and matzoon are often of great value. After some weeks some carbohydrates may be given in the form of one of the malted foods. The use of Keller's malt soup extract has given excellent results in many of these cases. After improvement has been going on for several months, the diet is increased until the patient is on full rations.

In some cases colonic flushing is useful, but it should not be forgotten that continued irrigation sometimes keeps up the production of mucus. Calomel frequently exerts a marked influence, a full dose should be administered every five or six days. The drug which has given the most satisfactory results to the writer in the treatment of this disease is sodium phosphate. From four to six grams are given three or four times daily. A most important adjunct to the treatment is a modified rest cure. The patient must be put to bed for two or three hours during the day. Proper clothing, regular exercise in the open air, massage, sponging with cold water are all of great importance and contribute as much to the obtaining of good results as special measures adopted. An improvement in the general disposition of the patient is one of the first things noticed. Instead of being irritable, fretful and peevish, the child becomes quiet, affectionate and happy.

724 HIGHLAND BUILDING.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Meeting of December 8, 1910.

ELI LONG, M. D., *in the Chair.*

This was a joint meeting with the Philadelphia Pediatric Society.

OBSERVATIONS UPON THREE HUNDRED CASES OF ACUTE MENINGITIS IN INFANTS AND YOUNG CHILDREN.

DR. L. EMMET HOLT presented this paper which was read by Dr. John Howland. He stated that with the introduction of lumbar puncture the diagnosis of acute meningitis entered upon a new phase. This was quite as important an advance in this group of diseases as was the adoption of throat cultures in diphtheria and other throat affections. Lumbar puncture had been systematically performed upon all suspected cases in the Babies' Hospital

during the past five years. The observations included in this paper related to 300 cases of acute meningitis seen in this hospital in children for the most part under three years of age. Of this number 197 had been observed during the lumbar puncture period. Etiologically the 197 cases were divided as follows: tuberculous, 138; pneumococcus, twenty-two; meningococcus, twenty-four; staphylococcus or streptococcus, ten; bacillus influenzae, four; colon bacillus, one. Two mixed infections were counted twice. During the last five years lumbar puncture has been performed about 1000 times and after simple lumbar puncture no accidents have occurred. In a single instance in which repeated punctures were made, secondary infection did occur. In another case an alarming collapse occurred after the injection of about 35 c.c. of serum. While too much could not be said in favor of the procedure, it required considerable skill and as strict asepsis as any surgical operation. The term "simple meningitis" no longer had any significance and should be dropped. There was not the slightest doubt but that the largest proportion of cases so classified belonged to the tuberculous group.

Beginning with the smallest group Dr. Holt considered colon meningitis. He reported two cases in which the colon bacillus was responsible for the meningitis. Both cases were infants four weeks old; in one there were no symptoms pointing to visceral lesions while the other, it was reported, had suffered from a urinary infection due to the colon bacillus. The first child succumbed; the second recovered but developed a secondary hydrocephalus.

Cases of influenza meningitis were rare and resembled the meningitis due to the meningococcus. It was only by lumbar puncture that a diagnosis could be made. These cases all ended fatally and, so far as he could learn, this was the almost invariable termination. In three of the cases the bacillus was found in the throat cultures and in cultures from the naso-pharynx, thus suggesting the nasal mucosa as the port of entry. Meningitis from pyogenic organisms occurred infrequently and it was rather striking that in six out of ten cases in his experience it had occurred in newly born children, and in five of these cases it occurred secondarily to spina bifida.

Dr. Holt said that his experience led him to question whether the dangers of meningitis from cases of otitis or mastoiditis were as great as they had been represented. It was his opinion that in patients under two years of age, meningitis from a neglect to perform the mastoid operation was one of the rarest occurrences.

In regard to meningococcus meningitis the author stated that the number of cases coming under their observation, twenty-four, was too few to admit of generalizations. Fourteen children had received serum treatment, of whom six recovered and eight died. In several of the cases which ended in recovery the nervous symptoms were slow in disappearing. Inability to support the head sometimes persisted for two or three months, and in two cases

evidence of moderate intraventricular effusion persisted for several weeks, but finally disappeared. The striking features had been the irregularity exhibited in these cases, the slowness of recovery, and the large doses of the serum required in those who did get well.

Of ten cases which received no serum three recovered and six died; one was discharged unimproved and doubtless died soon after. Pneumococcus meningitis was clinically of shorter duration than any of the other forms, possibly excepting that form due to influenza. In eight of twenty-two cases it lasted three days or less; in two-thirds of the entire number it lasted six days or less. It presented greater difficulties of diagnosis than any of the other forms, because the lesion was usually most marked at the convexity of the brain. Opisthotonos, irregularity of the pulse and respiration, cranial nerve involvement and distention of the fontanelle were usually wanting. This form of meningitis occurred in younger patients than either cerebrospinal or the tuberculous form. Half of their cases occurred in infants under six months of age, and two-thirds were under nine months. It was Dr. Holt's opinion that pneumococcus meningitis was the result of a generalized pneumococcus infection. This had been confirmed by finding the pneumococcus in the heart's blood in every one of seven cases of pneumococcus meningitis in which cultures had been made. The writer felt sure that the great frequency of tuberculous meningitis was not appreciated. It occurred in 70 per cent. of their cases of acute meningitis, apart from the epidemic of cerebrospinal meningitis. During the past four years eight per cent. of their hospital deaths had been from this cause. In general practice tuberculous meningitis was very often overlooked or a mistaken diagnosis made. Of 30 successive cases admitted to the hospital, in only three was the diagnosis of tuberculous meningitis made, and in only three others was it suspected. Two common misconceptions regarding tuberculous meningitis were that it was a disease of long duration, whereas it rarely lasted over five weeks; the second error was the impression that tuberculous meningitis usually affected delicate infants. This did not mean that healthy infants were more prone to the disease, but that a tuberculous infection in a young child was very apt to involve the brain early before there was time for the symptoms which resulted from general tuberculosis to be manifest. In tuberculous meningitis bacilli were always present in the cerebrospinal fluid; although difficult to find in the early stages, in the later stages a careful examination should disclose them. The von Pirquet test in most cases gave positive results. Pulmonary lesions were present in nearly all cases. Tuberculous meningitis was of human origin. The most frequent cause being exposure to adults with pulmonary tuberculosis. By far the larger number of cases occurred during the late winter and spring. The seasonal occurrence and the age incidence were points not yet fully explained.

THE CONSTANT PRESENCE OF TUBERCLE BACILLI IN THE CEREBRO-
SPINAL FLUID OF TUBERCULOUS MENINGITIS: WITH
OBSERVATIONS UPON THE CEREBROSPINAL FLUID
IN OTHER FORMS OF MENINGITIS.

DR. JOSEPHINE HEMENWAY read this paper. A systematic effort had been made in the laboratory of the Babies' Hospital to determine the presence of tubercle bacilli in the cerebrospinal fluid of cases of tuberculous meningitis; 138 had been admitted since March, 1906, but fluids for examination were obtained 137 times only. In all but two the tubercle bacilli were demonstrated in the cerebrospinal fluid. The technic which had resulted in such satisfactory results Dr. Hemenway gave in detail. There was but little doubt that the bacilli were more numerous late in the disease, yet they were found in the first puncture in 117 cases; in the second, thirteen; and in the third, four. Most hospital cases were not admitted until symptoms were tolerably well marked. Therefore, it was somewhat difficult to say how early in the disease the bacilli might regularly be found. On an average the first puncture was made about ten days before death. Examination of the cerebrospinal fluid was made in twenty-two cases of pneumococcus meningitis. The fluid in twenty could not have been distinguished macroscopically from turbid fluids in other forms of meningitis. The cells were chiefly polymorphonuclear; the organisms were plentiful in the smears, and grew readily in cultures. The cerebrospinal fluid in four cases of influenza meningitis all showed great turbidity, the cells being practically all of the polymorphonuclear variety, and the influenza germs were readily cultivated. In a series of twenty-four meningococcus cases, the fluid from twenty-two showed the usual turbidity, great numbers of polymorphonuclear cells, and the presence of the meningococcus in the smears and by culture. From a study of some histories she gave, the question arose whether there might not be a definite meningeal inflammatory lesion present, with, at the same time, a clear cerebrospinal fluid from which no organism could be cultivated. In ten cases of streptococcus meningitis the fluid from each showed great turbidity. There were many polymorphonuclear cells present, and the streptococci were present in large numbers, and grew readily on the ordinary media. There were three cases in which more than one type of organism was found. Tests with Fehling's solution were made upon all fluids to determine the diagnostic value of the presence of a reducing substance, but the results were so inconstant that no reliance could be placed upon this test in differentiating between tuberculous and other forms of acute meningitis.

The globulin test of Noguchi had been used recently; seventeen cases of meningitis (eight tuberculous, five meningococcus, and four influenza) all gave typical positive reactions. This test appeared to be of great value in differentiating the normal from the abnormal fluids.

INFLUENZAL MENINGITIS AND ITS EXPERIMENTAL
PRODUCTION.

DR. MARTHA WOLLSTEIN read this paper. The employment of lumbar puncture as an aid in diagnosis had established the fact that the influenza bacillus was a not infrequent cause of seropurulent meningitis. Influenzal meningitis appeared to be a very severe and highly fatal form of meningitis and to be exceeded in respect to its fatality only by the pneumococcus and tuberculous forms. Within the past year eight cases of influenzal meningitis had come under her observation; the influenza bacillus was isolated in every case from the fluid removed by lumbar puncture. All the cases terminated fatally. The influenza bacillus was a slender rod, somewhat varying in size, staining deeply at the poles, and being Gram-negative. Its invariable and most prominent characteristic was its hemophilic property, next to which pleomorphism was its most striking attribute. It may be considered conclusively established that a pseudoinfluenza bacillus producing pathologic conditions in human beings did not exist. The cultivation of the influenza bacilli dealt with in her paper was done exclusively upon agar mixed with rabbit's blood. At the Babies' Hospital for the past two winters it had been the custom to take cultures on blood-agar plates from the pharyngeal and bronchial secretions of almost every child admitted; in this way they had collected a considerable number of strains of the influenza bacillus and numerous data on its occurrence in the body of children during life and after death. The cerebrospinal fluid in the eight cases was, without exception, cloudy and deposited on standing a whitish or yellowish sediment, the supernatant liquid remaining decidedly turbid. They all showed the presence of polymorphonuclear leucocytes in abundance. The morphology of the bacilli varied greatly. It was possible that the influenza bacillus might be present in the cerebrospinal fluid without setting up a meningitis, in which case the fluid would be clear provided the number of bacilli was not great. An effort was made to cultivate the bacilli upon plain agar, sheep-serum agar and blood agar. No growth was obtained on the first two media, but a growth was always obtained on the last one. The pleomorphism of the bacilli was brought out clearly by observing cultures from day to day.

The bacilli were inoculated into mice, guinea-pigs, rabbits, and monkeys. The most important of this series of animals experiments were those which were conducted with monkeys. They succeeded in producing in two species (*cercopithecus callithrichus* and *macacus rhesus*) infection of the meninges, by injecting suspensions of the influenza bacilli into the subdural space by means of lumbar puncture. The results of the inoculation of monkeys into the subdural space of the spinal cord with virulent culture of the influenza bacillus indicated that an experimental form of influenzal meningitis could be produced, which tended to run a

rapidly fatal course, in this respect resembling the clinical disease occurring spontaneously in human beings.

Agglutination reactions were not satisfactory, and no differentiation of strains was possible by this method. Opsonins were but slightly more satisfactory. Complement tests were out of the question.

From all the facts given it would appear that the influenza bacilli isolated from the cerebrospinal fluid from the cases of meningitis were identical with the bacilli commonly obtained from the respiratory tract and that the chief difference between the bacilli met with was one of virulence. The frequent findings of the influenza bacillus in cases of endocarditis, purulent arthritis, empyema, appendicitis, peritonitis, meningitis, and otitis, as well as their frequent occurrence in the bronchial and naso-pharyngeal secretions in cases of clinical influenza, indicated that this organism, like the pneumococcus, was capable of causing inflammations of the serous and mucous membranes anywhere in the body.

The upper respiratory tract would appear to be the most frequent portal of entry for the influenza bacilli and to account for their frequent localization in the middle ear, bronchi, and lungs. Whether the meninges were infected directly through the lymphatic connections existing between the upper nasal mucosa remained an undecided question.

The great preponderance of cases of influenzal meningitis among young infants and its very high mortality were very striking, as was the opportunity which lumbar puncture gave for early and correct differential diagnosis in this disease.

DR. J. P. CROZER GRIFFITH of Philadelphia said that when the subject of meningitis appeared on the program he felt glad to observe that reference to epidemic cerebrospinal meningitis had been, to a large extent, omitted. It would, indeed, have been carrying coals to Newcastle for members of the Philadelphia Pediatric Society to come to New York to discuss the latter subject, in view of the large epidemic of this disease from which New York had suffered in recent years. After hearing, however, the papers of the evening, the visitors were practically in much the same position. The topic had been treated so completely and in such detail that there remained really little to be said. All that he could do would be to give general impressions not based upon exact statistics.

In looking over the records of the Children's Hospital of Philadelphia, Dr. Griffith said he found during the last ten years that there had been admitted 239 cases of meningitis, of which number 121 were tuberculous. Although the diagnoses were necessarily primarily clinical, most of them had been confirmed by lumbar puncture and in many cases by autopsy also. There must necessarily be a certain proportion in which the diagnosis was not confirmed and was possibly incorrect, but on the whole the figures given might be taken, he thought, as fairly representative of the facts.

So far as his practice outside the hospital was concerned, the great majority of the cases seen by Dr. Griffith were tuberculous, omitting from consideration those of the epidemic cerebrospinal type. Regarding the age at which tuberculous meningitis was oftenest seen, the majority, he believed, occurred during the first two years of life, although but few of them before the age of six months. In nearly all the cases of tuberculous meningitis the disease was clinically meningitis only. That was to say, there was no association of other symptoms. Perhaps the most frequent exceptions were seen, first, in older children suffering from tubercular disease of the bone, in which meningitis finally developed and caused a fatal ending; and, second, in infancy and very early childhood, in the cases of general tuberculosis, in which the meningitis was only one of the clinical manifestations and often the latest to show itself. At autopsy, of course, tuberculous meningitis was practically never found alone. Even when the chief manifestation, it was probably secondary to a lesion somewhere else in the body, though this might be very small and possibly overlooked.

With regard to the frequency of the tubercle bacilli in the cerebrospinal fluid, Dr. Griffith agreed with what had been stated. He thought they should be discoverable in the great majority of cases although long and careful search might be required. As to the von Pirquet test, its absence was certainly a point against the existence of tuberculous meningitis except in the advanced cases where the reaction of the organism was no longer great enough to manifest itself. The presence of a cutaneous reaction, of course, would not prove that the case was one of tuberculous meningitis, but only that the tuberculous process existed somewhere in the body. This was a matter, however, so much written about that he did not dwell further upon it.

During the last five years there had appeared in the wards of the Children's Hospital of Philadelphia 119 cases of meningitis; six of them were proven by lumbar puncture to be pneumococcic. In the matter of lumbar puncture, not only must a bacterial investigation be made, but a careful cytoscopic study of the fluid as well. The common belief that tuberculous meningitis produced an increased number of lymphocytes in the field was, he thought, entirely correct, but was open to exceptions. Cases had been repeatedly reported in the medical literature where the polymorphonuclear cells were proportionately greater, and Dr. Griffith had seen instances where the cytoscopic examination, taken by itself, would have suggested that the disease was of nontuberculous nature.

DR. JOHN LOVETT MORSE of Boston said that as the papers were being read he was reminded of a series of cases which he had recently seen in which the results obtained by means of lumbar puncture and the examination of the cerebrospinal fluid were disappointing, in that they were confusing and did not afford a positive diagnosis. Dr. Morse had seen a number of cases of

infantile paralysis of the encephalitic type, and some others which later proved to be of the spinal type, in which the spinal fluid was under increased pressure; these cases showed a fibrin clot and an increased number of cells per cmm. and a large excess of mononuclear cells, usually lymphocytes. In other words, the characteristics of the fluid were exactly those of tuberculous meningitis except that the tubercle bacilli were not present. If the fluids were always examined as carefully as were those examined by Dr. Hemenway, the absence of tubercle bacilli would rule out tuberculous meningitis. In routine hospital examinations, however, his experience was that tubercle bacilli were missed in about 90 per cent. of the cases of tuberculous meningitis, so that under these conditions the absence of tubercle bacilli was not of great importance in the differential diagnosis. A positive tuberculin test was obtained in a number of these same cases which later proved to be cases of infantile paralysis. The presence of a positive tuberculin test in this class of cases was still further misleading, and erroneous conclusions could only be avoided by a very careful examination of the fluid for the tubercle bacilli.

DR. EDWIN E. GRAHAM of Philadelphia said that the papers had covered the ground so thoroughly, especially in what was said regarding laboratory methods, that there was hardly anything left for discussion, and nothing to criticize. The standard set by Dr. Hemenway for tuberculous meningitis was a new one; the finding of tubercle bacilli in 135 of the 138 cases was remarkable. It meant that a new technic had been worked out which gave accurate and positive results.

In the papers it was shown that the meningococcus was not always found at the first examination of the cerebrospinal fluid, especially if this examination was made early; it was a question as to just how early the tubercle bacillus was present in the spinal fluid in cases of tuberculous meningitis. It seemed to Dr. Graham, therefore, that any symptoms that were present early in cases of meningitis, and were not present when the central nervous system was not involved, should be of extreme value in assisting in an early diagnosis, and that it was possible in the enthusiasm displayed in examining cerebrospinal fluid to overlook clinical symptoms which might aid in assisting in making an early diagnosis.

Brudzinski drew attention to two symptoms which he claimed to be present in meningitis, and not present in other diseases: first, the passive flexion of the head forward caused flexion at the thighs, knees, and ankles; second, there was a concomitant reflex of the leg on one side when passive flexion of the leg on the other side was made.

During the last year and a half Dr. Graham said he had changed radically in regard to lumbar puncture. Formerly he had been willing to wait until the symptoms were fairly well pronounced. He could look back and remember cases in which

he advised waiting twenty-four to forty-eight hours until the symptoms became pronounced. Now he thought this to be a mistake. Lumbar puncture should be done in every case where one had reason to suspect the presence of meningitis.

In cerebrospinal fever, that was absolutely necessary from the standpoint of treatment. In the early stages of a severe case of cerebrospinal fever, the rapid accumulation and consequent pressure of the cerebrospinal fluid itself had much to do with the pressure presence of certain symptoms. Early and repeated puncture in these cases would at least ameliorate the symptoms. He had seen one case of cerebrospinal fever which later died of tuberculous meningitis. This patient, a girl, recovered from the cerebrospinal fever but was bedridden and finally died of tuberculous meningitis.

DR. SAMUEL MCC. HAMILL of Philadelphia said, "It is curious how close one can live to facts without recognizing them. Until he had seen Dr. Holt's charts he had never been impressed by the fact that tuberculous meningitis showed such a seasonal tendency. In thinking over the dates of occurrence of fifteen cases, which he saw during the past year, he thought that all but two had been seen between February the first and the end of May, corresponding, therefore, to the dates indicated by Dr. Holt's tables.

Dr. Hamill said he was glad to hear what Dr. Holt had to say in regard to the Von Pirquet reaction in cases of tuberculous meningitis. Like Dr. Holt, he had gathered from the literature that cases of tuberculous meningitis failed to react; in every case he had seen during the last two years he had been able to demonstrate the reaction to his own satisfaction. He thought, however, that a great deal depended upon one's ability to interpret the reaction. In anemic and emaciated cases there may be practically no area of erythema, only the induration being present. In colored children the interpretation of the result is especially difficult because one must more often depend solely upon the circle of induration.

DR. J. D. MILTON MILLER of Atlantic City, N. J., thought that Dr. Griffith's figures were misleading in reference to the prevalence of tuberculous meningitis. He understood him to say that in the Children's Hospital in Philadelphia, out of 239 cases of meningitis 121 were tuberculous. Dr. Miller's impression was, but without supporting figures, that about two-thirds of them were tuberculous. This was the impression he had when he looked back over the cases treated in his service. The figures Dr. Griffith gave might be explained by the fact that many of them antedated the test by lumbar puncture; that many, therefore, were based upon insufficient evidence. In many cases the tubercle bacillus was not found and to the investigator this was sufficient to exclude tubercle. Anyone who had seen many cases of tuberculous meningitis must realize how very variable were the symptoms and how much they differed from those described in the text-books

and, therefore, how impossible it was to make the diagnosis without resorting to lumbar puncture.

It seemed to Dr. Miller that the papers read touched upon a moral issue; namely, that tuberculous meningitis was, after all, a common disease, a fact which was not recognized as it should be by the profession at large, or the public to whom tuberculosis meant pulmonary consumption only. What had been brought out in the papers should prove a valuable weapon in the hands of those who were fighting tuberculosis. Physicians should impress upon parents how common tuberculosis was, how it affected little children, and how fatal it was; if the parents knew this he thought that they would be much more willing to give financial and moral support to the efforts now being made to stamp out tuberculosis than they now did.

DR. JOHN H. W. RHEIN of Philadelphia said he was very much interested in the papers of the evening and what remarks he had to make were rather a discussion of the subject than a discussion of the papers. He had recently made a study of nine cases of tuberculous meningitis in children in which a microscopical examination was made of the cortex of the brain taken from the region of the fissure of Sylvius, from the basilar surface of the frontal lobe and from the paracentral region. A study of these cases showed that there was a cellular infiltration of the pia in all of these regions which seemed to be a process separate and distinct from the miliary tubercles present. These cases were readily divided into the exudative type, the proliferative type, and the mixed type. Sharp lines between these types could not be drawn.

The cells in the exudative form consisted mainly of leukocytes, but there were also lymphocytes and plasma cells with a few connective-tissue cells. In the proliferative cases the cells were chiefly of the connective-tissue type, although some lymphocytes and plasma cells were found. In the mixed form the cellular infiltration was proliferative in type in one place and in another exudative in type. A careful study of the cortex in these places revealed the fact that in over one-half of these cases the cortex was implicated. Cellular infiltration, perivascular round-cell infiltration and microscopic hemorrhages were observed. These cases could be looked upon as instances of meningoencephalitis.

Apropos of the contention of Hunguenin, Huttenbrenner, Cornil, and Hirschberg and later by Hektoen and Diamond, that the origin of tuberculous meningitis was vascular and that the meningeal and other lesions were secondary, a study of the blood-vessels was made in his cases. Dr. Rhein found vascular lesions present to a greater or less degree in all. These consisted of a cellular proliferation of the intima of the small veins, one or two vessels being occluded. The vessels walls were occasionally found to be thickened. Perivascular round-cell infiltration was observed quite frequently and in one case the outer coat of a capillary had undergone hyaline degeneration. This change was rather

insignificant on the whole and not comparable in any way with the blood-vessel change found in syphilis, for example.

The character of the meningeal change was such as to lead Dr. Rhein to the conclusion that the lesion was not a purely tuberculous one. He believed it was probably the result of a mixed infection and not one entirely due to the tubercle bacilli. The lesion of tuberculous meningitis in children differed from that found in the brains of adults dying from pulmonary tuberculosis with secondary involvement of the meninges of the brain cortex and which was often found accidentally at autopsy.

If some form of antitoxin or vaccine could be discovered to favorably influence that part of the process which was caused by other microorganisms than the tubercle bacillus, it might be possible to keep the patient alive a sufficient length of time to bring about a cure of the tuberculous process itself.

DR. B. FRANKLIN ROYER, of the Pennsylvania State Department of Health, Harrisburgh, Penna., said that acute meningitis was not particularly difficult to diagnose. Out of 167 patients coming under his care in the Philadelphia Hospital for Contagious Diseases during an outbreak of epidemic meningitis, 147 had been properly diagnosed as of the epidemic type; five were tuberculous, the others the various acute types of meningitis, several of them following suppurative processes. The diagnosis in practically every instance had been made by the family doctor; in only a few instances had lumbar puncture or other scientific test been applied; in a few cases the Department of Health had rendered assistance; in a few, resident physicians from the hospital had confirmed the diagnosis already suspected.

Dr. Royer said he was very much interested in studying the chart presented by Dr. Holt, showing the frequency of tuberculous meningitis at the various age periods. In Dr. Holt's experience at the Babies' Hospital the tuberculous type prevailed in 70 per cent. of the cases having meningitis, while in Dr. Griffith's tabulation at the Children's Hospital in Philadelphia something more than 50 per cent. having meningitis were tuberculous. In the first instance Dr. Holt's tabulation was made in the Babies' Hospital where children from three years and under were received for treatment. In the Children's Hospital in Philadelphia where older children were treated, not so large a percentage of them were less than one year of age. Possibly had an analysis been made along exactly parallel lines, the difference would not have been great. In older children tuberculous meningitis was less common.

A differential cell count was of value in studying the spinal fluid. With the majority of cells lymphocytes, even without bacilli, tuberculous meningitis might be diagnosed. Other important aids were valuable. Nothing has been said about an ordinary white-cell blood count in the various types of meningitis. In the acute type of the disease, except where the organism was overwhelmed with toxins, and the patient was relaxed and

flabby, the leukocyte count would run from 10,000 to 15,000 per mm. up to 45,000 or even higher. In the tuberculous type, however, he had never seen such a rise in the leukocyte count. Dr. Royer said he did not mean to decry lumbar puncture, as he believed in a careful study of the spinal fluid in all cases; he regularly practised it and he had followed through to autopsy practically every case dying under his care.

DR. HERBERT FOX of Philadelphia wished to mention two rather interesting cases.

The first was diagnosed as a case of gonococcus meningitis. This diagnosis had been questioned many times, but the determination in this case was made by a man of unquestioned ability, and upon the facts that the organism could not be grown on the ordinary nutrient media but required serum media, and that it produced conjunctivitis in the rabbit's eye. The differentiation between the meningococcus and the gonococcus should be made by serum tests and sugar fermentation.

The second case was a man, nineteen years old, with septicemia. After about three or four weeks of his illness he had distinct symptoms of meningitis which disappeared within two weeks. Several days after the disappearance of this meningitis, a pseudodiphtheria organism was found in the blood. The patient died, but an autopsy was refused.

This type of infection should be borne in mind in connection with middle-ear disease in which the pseudodiphtheria organism was found. The question as to the increase of globulin was very interesting and important. One should not stop at a consideration of the globulin but should go further. There was a globulin formed in ordinary coagulation. Was it a globulin from nuclealbumin or nucleoproteid, or were there any results of nucleoproteid cleavage? There was undoubtedly a spontaneous coagulation during the early stages of poliomyelitis. Wickman had lately changed his opinion as to the origin of poliomyelitis, formerly believing it to be hematogenous; he now considered it lymphadenous. In this connection one should not forget the above-named coagulation, indicating some alteration in the circulation early in the disease. More study along this line might give light as to the pathological physiology of many forms of meningitis.

Meeting of January 12, 1911.

THOMAS S. SOUTHWORTH, M. D., *Chairman pro tem.*

CONGENITAL GOITRE.

DR. EDWARD W. PETERSON presented this case. The patient was but five weeks old when admitted to the hospital on January 18, 1905. Her parents were Hungarians and both were healthy. There was no history of syphilis, tuberculosis, cancer or goitre in the family. The mother had had one miscarriage at the second

month. The child presented was her first. The labor was easy and uneventful. The child was normal except for the swelling on the right side of the neck. There was some difficulty in breathing during the first hours after birth; this soon subsided and up to the time of her admission there had been no dyspnea or inconvenience.

The physical examination showed a tumor of the right side of the neck, filling the submaxillary space; this extended downward nearly to the clavicle. Its surface was moderately firm in consistency and it did not fluctuate at any part. Below and to the sides there was felt distinct nodulation.

An incision was made parallel to the border of the right sternocleido-mastoid muscle. A fibrous capsule which surrounded the growth was opened and the tumor was dissected out without difficulty. There was very little hemorrhage although on several occasions it became necessary to stop operation because the infant ceased to breathe. Artificial respiration was employed for twenty hours after the operation. Except for a high temperature, 105 F., which immediately followed the operation and a slight bronchitis there were no special features worth recording until the ninth day when the child had a convulsion which lasted about five minutes. On the thirteenth day there appeared twitchings in the extremities and the eyes rolled from side to side. On the day following there were almost constant slight convulsive movements of the hands, arms, legs as well as of the muscles of the face.

As soon as it was discovered that the tumor was thyroid, and believing that the whole gland had been removed. Thyroid extract was administered, and within twenty-four hours the tetany ceased.

PATHOLOGICAL REPORT ON CONGENITAL GOITRE.

DR. FREDERICH E. SONDERN made this report. The tumor was horseshoe in shape; one side was composed of a large elongated mass measuring 6 cm. in length, 4 cm. in width, and 3 cm. in thickness. The other side was composed of a small tumor measuring 4 cm. in length, 2 1/2 cm. in width, and 2 cm. at its greatest thickness. These two tumors were joined together at the concavity of the horseshoe by an isthmus of fibrous tissue. Both of the masses had a slightly irregular lobulated appearance.

Sections taken from both tumors showed the same structure which was that of the thyroid gland. The acini had undergone a slight adenomatous proliferation and were filled with a very dense colloid material, the greater number of them being distended by it to the dimensions of small cysts. The epithelium was much infiltrated by intra-acinous pressure of the colloid. Nowhere did the epithelium show any malignant proliferation. The entire growth was surrounded by a thin, fibrous capsule.

The diagnosis was adenoma and colloid degeneration of the thyroid gland (goitre).

DR. PETERSON said that except for a few minor ills the patient had been healthy. The points of interest in this case were 1, the presence of a congenital tumor of the neck which proved to be a goitre; 2, the abnormal location of the thyroid gland; 3, the accidental complete thyroidectomy(?); 4, the development of tetany; 5, the disappearance of the tetany after the administration of the thyroid extract; 6, the subsequent normal physical and mental development of the patient.

Dr. Peterson said the following questions naturally arose: Was all the thyroid tissue removed at the time of operation? Why did tetany develop? Would the child continue to develop normally?

DISCUSSION.

DR. JOHN ROGERS said that the first question that arose in his mind regarding the child presented by Dr. Peterson was, had all the thyroid tissue been removed. It seemed to him hardly possible that the child should develop as it had were this the case; a child could hardly grow as this one had without some thyroid. It was possible that the slight enlargement he felt on the left of the child's neck which moved when the child swallowed might contain some thyroid tissue. It did not seem possible to Dr. Rogers that such a child could be so well developed and be so intelligent without any thyroid. Not long ago a case was reported in the literature in which sections were made of the heart muscle and two distinct masses, about one-quarter of an inch in diameter, were located in that muscle. There were no doubt a few cases apparently without thyroid glands, but who had thyroid tissue located somewhere in the body.

The question of the origin of such a condition was both curious and interesting. In the fetus this gland was said not to functionate before the seventh and a half or eighth month. From that time the colloid material might collect and act. Possibly there might be some obstruction to the outlet of this colloid material developed during fetal life from a chronic strumitis.

Dr. Rogers thought that Dr. Peterson should be congratulated upon the results he obtained. It was possible that the child might have to be fed thyroid some time in the future to insure good health, especially at the time of puberty when thyroid symptoms were very likely to be shown. The child should be, in his opinion, carefully watched.

DR. A. JACOBI said that from what Dr. Peterson had told them it was only the right lobe of the thyroid that had been removed. A congenital goitre like the one presented was apt to grow in all its parts; the case presented was, therefore, an exceptional one. If both lobes of the thyroid gland had been removed, together with the isthmus, the probabilities were that the child would have suffered more from the beginning of the disease; then the doctor would have felt compelled to remove all. Dr. Jacobi thought that the probability was that the parathyroids had been removed as

well, and this would explain the occurrence of tetany at the time. If the entire thyroid had been removed, tetany would have been present all the time. What had been accomplished, however, was very fortunate.

It was stated that the tumor was located high up; that is explained by the fact that the thyroid in the fetus and in young babies was situated higher than in the adult. All cases of congenital goitre were of that nature; they were located higher in the neck and, therefore, it was easier to mistake it for a hygroma; a simple hygroma might be found in this same situation and without a microscopical examination a mistaken diagnosis was easy to make. In looking over the European literature Dr. Jacobi said he was surprised to note the small number of cases seen in this country among those of young years when compared to the number abroad; there was comparatively such a small number of congenital cases of goitre. On the other hand, he believed that a great many cases of goitre that were not considered to be congenital were in fact congenital. For instance, sarcoma of the kidney was seldom observed by mothers in babies before the age of two, three or four years; before that age no symptoms were reported, yet many *were* congenital. Similarly many cases of goitre in small children were congenital but were not noticed because they were too small and did not give rise to symptoms of a serious nature. That was probably the case in this instance. Such mistakes in diagnosis were easily made and many such instances have been mistaken for hygromata. A goitre was either parenchymatous that means real goitre tissue, which is cystic, or there is an hypertrophy of the cellular tissue similar to what is found in fibromata of the uterus. One should, however, always insist upon looking for colloid material in these cases.

The result in Dr. Peterson's case was a fortunate one both for the doctor and the patient; they saw very few of such cases. In Demme's work published thirty odd years ago, it was stated that among 650 cases of goitre in the young fifty odd could be traced to congenital origin. If Demme was alive to-day, Dr. Jacobi thought that he might be able to collect 1,000 more such cases. A very concise and instructive article on the same subject is contained in Ballantyne's "antenatal pathology."

DR. GEORGE DOW SCOTT reported the case of a child with a goitre on the left side of the neck, cystic in character. Dr. Scott said he had been experimenting with pituitary gland extract (Beebe's) and he used it in this case with the result that the enlargement seemed to be diminishing in size. Under the use of the serum there seemed to be a gradual disappearance of the enlargement and within one week.

DR. EDWARD W. PETERSON (closing the discussion) said that the operation was undertaken with the diagnosis of lymphosarcoma, a wrong diagnosis. When the specimen was examined after its removal, it was thought that the entire gland had been taken away. In the specimen presented it was seen that there

were two lobes joined by an isthmus. The tumor was simply shelled out, a capsular enucleation. The child presented was about the average, with good physical development, and was the best child in kindergarten. The result of the work on this child by Dr. Peterson was certainly very satisfactory.

THE PROPER MANAGEMENT OF FOUNDLINGS AND NEGLECTED INFANTS.

DR. HENRY DWIGHT CHAPIN read this paper. He said that the subject of infant mortality was now in the air; a heavy mortality had always existed; it seemed to him there was a belated struggle in the efforts to reduce it and stop such a waste of life. It seemed strange that while the general death rate had been lowered throughout the civilized world, the infant mortality had remained stationary. Steps were being taken to reduce this in the line of encouraging maternal nursing. To improve the milk supply a more accurate study of substitute feeding and a better knowledge on the part of physicians regarding infantile physiology and pathology were necessary. There was one aspect of the question that had not received the attention it deserved; that was, the management of foundlings and neglected infants without proper home care. This was a class that enormously swelled the death rate. The first step to improve the conditions should be the removal of these infants from institutions, improve the feeding methods and personal hygiene; they should not be collected and retained in large numbers in any one domicile. Such infants showed a progressive loss in weight, especially those infants under the age of six months. Accompanying this often there was a marked dryness of the skin, a wearing off of the hair from the occiput, etc. They were prone to get pneumonia, usually of the hypostatic variety, and this often was the terminal condition. The communicable diseases were very rapidly spread in institutions. The time had come for the medical profession to recognize the fact that infants should not be collected and kept in asylums or institutions of any kind. This was not because of any relapse in the care of the infants in these institutions, but the system itself failed because it was wrong.

Dr. Chapin made a distinction between the hospital care of infants and the asylum care; the latter dealt with well babies which might become ill during their sojourn in the institution; this made a radical difference. Whereas those in the hospital were received because they were undoubtedly sick; these were the ones that should be discharged as early as possible and then followed up by members of some society like the one inaugurated by the writer in his work with babies at the Post-Graduate Hospital in 1890 and which work had been in successful operation ever since. In place of the institutional care of these infants the writer strongly recommended an amplification and systematizing of boarding-out and a careful following up system. This avoided the dangers of

institutionalism and gave the care required for this class of cases. He proposed the abolition of the larger asylums and institutions for the care of babies, substituting for them many collecting stations. These stations should act as clearing houses where babies, whose physical condition permitted, could go for a day or so. These boarding-out places should be in the vicinity of the city and all that was required was a small part of a tenement house. The babies, who were not doing well in the city, should be sent to these boarding-out places where they could receive the same careful oversight. The only way to test this theory of Dr. Chapin's was to try it out in practice; this he had done since 1902. The Speedwell Society was formed for boarding-out infants at Morristown, N. J. In the operation of this work the following features were emphasized:

1. Boarding-out in certain districts of the country called for healthful surroundings; 2. constant attention should be paid to the diet and the hygiene on the part of the doctor and nurse who should be familiar with this class of cases and competent to deal with them; 3. the infants were kept as long as necessary until the feeding was regulated and digestion and assimilation sufficiently improved which would result in an increase in weight; 4. the training up in any neighborhood a number of fathers and mothers who were constantly taking infants in their homes so that they may become fairly expert in the handling of them and under conditions that were totally unlike those offered by the best institutions.

Since March, 1902, 1386 infants had been cared for at the Speedwell Society, and 501 of them were under two years of age. The number of deaths were as follows: Under six months the number received was 241, and ninety-one died; between six months and one year, the number received was 120, and twenty-two died; between one and two years, the number received was 140, and six died. There was only one death that occurred among those over two years of age among 885 cases. Practically all the younger children would have died if they had been kept in institutions; many were the typical marasmus cases.

If the plan elaborated could be carried out generally a large proportion of the infants could be saved. Very little capital was needed; the plan he outlined has proved to be economical, sound and efficacious.

DISCUSSION.

DR. A. JACOBI said it was well known that the mortality of infants under six months of age, was high, about 40 per cent. Every care should be given the infants from the very beginning; they should have the best of surroundings, the best nursing, the best care possible; if this was done the mortality percentage would not be as high as 40 per cent. for infants under six months of age. Under ordinary circumstances the average mortality of children under one year of age was about 29 or 30 per cent. The cases

referred to by Dr. Chapin under six months of age were some well and some diseased and this fact should be born in mind when 40 per cent. mortality was referred to. That was a high mortality for the average child. Dr. Jacobi had been through many experiences and he knew how babies would die. He recalled the time when he kept the books of a certain institution in which were small babies; no baby ever came to that institution at an early age who remained there three months that lived. In that institution of which he was the nominal head the mortality rate for babies but a few months old was 100 per cent. Therefore, Dr. Jacobi said he knew something about the difficulties which attended the care of such little ones in institutions; the difficulties encountered in caring for these babies in these institutions were powerfully brought home to him. In that institution there was too much interference. There were a few dozen superintendents; these ladies came in once a week with their long trails, and walked up and down the room or ward, with too much to say, always finding fault with the nurses and doctors and with others connected with the institution; for instance, one day Dr. Jacobi told the matron to remove heavy curtains from the babies' cribs. She refused, therefore, Dr. Jacobi himself removed them. This was in July when the babies were sweltering and perspiring and tortured by flies. On the same day in came a high official and asked, "Why did you remove those curtains?" and Dr. Jacobi replied, "Simply because I did not want the babies suffocated; therefore I took them off." This was an example of how institutions for babies were run in those days, forty years ago. In looking over the records of that institution Dr. Jacobi found that every baby that lived there three months was a dead baby. This fact he called to the attention of the Directors and proposed that the babies be farmed out. The result was that Dr. Jacobi was asked to resign; he told them he preferred to be expelled and expelled he was. This happened forty years ago. At that time this farming out of babies he insisted upon was not consented to until after his expulsion, and with unsatisfactory results. He hoped and trusted that Dr. Chapin would have better results and also that all present would do all in their power to help him in carrying on the work he outlined in his paper. This should not be his last paper on this subject; if it was, the work would soon be forgotten. The subject should be taken up again and again, not neglected at all, and there would be different results. After all, the public was not so dull as they sometimes believed it to be; there were many reasonable beings among them and to prove it he said he wished to quote from what had appeared in olden times. In his "Miscellaneous Addresses and Writings" (edited and published by William J. Robinson, M.D.) appeared an inaugural address, including a paper on infant asylum foundlings; this was delivered before the medical society of the county of New York in 1872. In this address Dr. Jacobi said as follows:

"The whole administration of the foundlings ought to be con-

trolled by the commonwealth. Both private and sectarian establishments ought to be under governmental supervision; ought to be supported or aided by the State, but not interfered with so long as their successes and general management appear satisfactory; the department of the foundlings to be centered in one office; the necessary appointments of the head or heads to be made by the Governor of the State. The expense of boarding the foundlings, except those in private or sectarian institutions, to be borne by the people of the State of New York."

The above referred to Dr. Jacobi's opinion on the responsibilities and duties, and the rights, of the State.

In 1871 the printed minutes of the Commissioners of Public Charities and Correction contained a proposition to make preparation for boarding out infants, submitted by the Medical Board of the Infant Hospital, Randall's Island. A paper was prepared, which was intended to be circulated over the signatures of the commissioners; they considered the publication impracticable at that moment, but they approved of and endorsed all its contents. They did so in the form of a letter directed to their Infant Hospital Medical Board and read as follows:

"Your special attention is herewith directed to the claims of a class of destitutes who, as they are helpless, are the more deserving of the sympathy of the just and benevolent. In their behalf the Commissioners of Charities and Correction have tried to improve the methods of supporting, raising, and educating, have built costly edifices, and gladly availed themselves of any advice their medical boards could afford them. Still the results of their efforts are far from being satisfactory, and, after careful consideration of the difficulties to be overcome and the aims to be reached, the undersigned request you to give your attention to the following remarks and to lend your valuable aid in furthering their endeavors.

"The class of destitutes in question are the foundlings and abandoned infants, amounting to the number of about three or four thousand a year, in the city of New York. Their claims have been so well acknowledged of late, and the public at large have become so conversant with the humane and political aspects of their case, that a number of associations have been formed for the purpose of either raising them or educating those who survive."

"From a report laid before them by the medical board of their Infant Hospital, which admits yearly about 1,200 or 1,400 of these destitutes, we gather the fearful and embarrassing fact that infants collected in large institutions, of the best hygienic designs, with the most careful dietetic and medical care, will die in large numbers. This immense mortality is particularly great in earliest infancy. Of forty-seven deaths in New York City under, five years of age, thirty-nine occur under two years and as many as thirty under one year. The mortality of abandoned children

under the charge of public or private authorities is still larger. The very accumulations of infants under one roof, the scarcity of breast milk obtained, the difficulty of securing competent nursing for a large number of infants, the ravages of contagious diseases, the poisoning by deleterious exhalations and excretions, etc., are just as many obstacles to the health and life of the young inmates of our public institutions. The difficulties of raising infants in our institutions and of gathering a sufficient amount of breast milk in for them induce the undersigned to try a change with a part of their inmates. A number of them are to be given in charge of responsible parties in the country surrounding New York. The not unfavorable results of farming, out even in cities, when compared with the mortality of institutions, encourage us to hope that infants farmed out in the country have a much greater certainty of life and a healthy future. And, with regard to this plan, we have herewith taken the liberty of sending you this communication.

"We propose to farm a number of babies out until they have reached the end of the third year. In particular cases special arrangements may be made beyond that age.

"Babies who have no teeth are expected to be fed on breast milk exclusively; such as have from two to four teeth, on mixed food. Afterward they are to be weaned according to such rules concerning the feeding of the children as shall be laid down by the undersigned on their medical board.

"A single party is to be entrusted with but one nursling. A medical examination only can decide whether in exceptional cases a woman is fit to nurse two infants. She may, however, obtain an older child in addition to the nursling.

"She must either be married, or a widow, or very well recommended. She must have plenty of breast milk for the nursling in charge, no matter whether she has lost her own baby or has sufficient nourishment for two (her own and the stranger). She must be healthy, not destitute, not intemperate, and known to be industrious and not entirely dependent on the board paid for the nursling. She has to present a certificate from responsible parties—physicians, clergymen, postmasters, town authorities, or well known citizens—concerning the above requirements, stating also how many children she has and how many she has lost.

"The applications of women who offer to take charge of infants are made at the office of the Commissioner of Charities and Correction. The depot of the babies is at Randall's Island. The house physician notifies an applicant to call for her boarder. She has to call personally. Travelling expenses are refunded. The board money is \$10. a month, to be paid semi-monthly, monthly, or bi-monthly.

"Besides, we offer to pay \$20. to a party, with whom a boarder has been living for sixteen consecutive months, at the end of his second year.

"These are the outlines of the principal rules which, in all probability, will govern the farming-out of infants in the country. We now apply to you, sir, and your friends, for your opinion and your co-operation. You can advise us, if, in your circle and neighborhood, the men in standing and authority, as mentioned above, would be found willing to help the cause of humanity and an enlightened political economy by giving such certificates as parties would require, by even encouraging a party to serve herself and the public by taking charge of an infant, and also by paying a certain amount of attention to the little one who has no mother but the community.

"The general superintendence will have to rest with the medical board of the Infant Hospital. Their house physician shall be entitled to provide for special inspection. Still, it will be of the utmost importance to interest the public at large in the welfare of the foundlings, particularly the ladies, who, according to localities, might form committees for the purpose of watching and superintending the foundlings and their nurses.

"You are respectfully requested to give the foregoing your attention, and to communicate to us your opinion as to the feasibility of our plans; whether, in your opinion, a certain number of women would be fit and willing to charge themselves with bringing up an abandoned infant in your neighborhood, and whether yourself or your friends, or their ladies, would be found willing, by occasional inspection, etc., to aid our attempts in raising infants, whose life is as valuable to society as our duties toward them are clear."

DR. JACOBI, in closing the reading of this forty-year-old letter of the Commissioners of Charities hoped that all would lend a helping hand in aiding Dr. Chapin in what he proposed doing.

DR. S. JOSEPHINE BAKER, Director of Child Hygiene, Department of Health, said that the mortality rate as given by Dr. Chapin was particularly interesting because it was taken from both the convalescent and sick babies. The problem attached to the high rate of mortality among foundlings and neglected infants seemed to her to be worthy the attention of all. It should be remembered, however, that foundling institutions received both the sick and well children. Dr. Baker presented a map of the Borough of Manhattan which by means of colored pins showed every death under one year of age that occurred during June, July, August and September, 1910, in private homes, in institutions, etc. It was shown that from May to November (six months) the mortality in three foundling hospitals was 18 per cent. of the total mortality of the Borough of Manhattan. The deaths from diarrheal disease among infants under one year of age gave a mortality of 19 per cent. of the total Borough death rate. A large number of the diseases were nutritional and this brought up a very interesting comparison. In one institution where about 70 per cent. of the children were boarded out a larger number died from nutritional diseases, from inani-

tion and congenital diseases; whereas in the other two, the highest mortality was from diarrheal diseases. The number of deaths among the children under three months gave a mortality of 56 per cent. of the total number of deaths occurring among children under one year of age. Of the total institutional deaths it was found that 6 per cent. were babies previously placed out to board in homes, artificially fed, this was compared with 45 per cent. of the mortality of those artificially fed in institutions. The deductions to be drawn were obvious. There was no doubt but that the mortality rate in institutions for babies was high; in institutions and among babies under one year of age the average mortality rate was about 40 per cent.

DR. BAKER agreed with Dr. Jacobi that it was time to seriously consider the situation when institutions furnished 18 per cent. of the total mortality during the summer months; this merited the attention not only of the medical profession but of health authorities and of everybody who was interested in the social and economic aspects of the situation. To lower the death rate among babies required that more children be placed out in homes as advocated by Dr. Chapin.

HASTINGS H. HART, LL.D., Director of the Department of Child Helping, Russell Sage Foundation, said that for many years he had had experience in dealing with the line of work outlined by Dr. Chapin, especially in an institution in Illinois where they cared for a large number of infants, and he was in a position to endorse what Dr. Chapin said regarding the effectiveness of boarding out these children. It should be borne in mind, however, that the physicians living in every community had it in their power to cut the mortality among this class of infants square in two even before Dr. Chapin had a chance to get them. The mothers first came directly under the care and influence of the physician whose influence was very powerful; these infants must come under his care first. If he was able to get the mother's confidence he could exert a very powerful influence with regard to what should be done with the baby. Mr. Hart had attended many conferences on the subject of infant mortality, and he had never found any division of opinion among those present on this:—"the mother's milk was what the baby most needed." He had found in many instances that the mother had given up nursing her baby on the advice of her physician or friends, as illustrated in the following instance. A woman from the country came to the city to be confined; she was attended by some physician. Some hospital received her because she might be valuable clinical material. The baby that came into the world was a side issue. The baby often was a load for the mother and many times the physician, as well as the nurse, advised against the mother nursing her infant. The advice given should be the opposite, of course. One should say to such a woman, "This is your baby; the baby is innocent; but it has a right to a fair start in life which you are able to give it." Give the babies the mother's milk. Advise the mother that if she

would care for her baby, you would care for her. Insist upon every mother nursing her infant. Laws have been passed in certain states punishing any woman who abandoned her infant; if a law was passed to punish every mother who refused to nurse her infant, without good and sufficient reason, the problem under discussion he believed would be in a large part, solved. In one of the western states a bill had already been introduced into the legislature requiring that every woman, when possible, should nurse her own baby. There was also introduced a bill imposing a penalty upon any one who attempted to persuade any woman not to nurse her baby.

It was a great cause of regret that some women could be persuaded to send their babies to a so-called "baby-farm" so that they might go out to wet-nurse. Sometimes they might be persuaded to divide their own milk, nursing their own as well as another baby. Many women forget the sacred obligations God had placed upon them. Babies should be cared for especially through or during the nursing period.

Mr. Hart said he was surprised and delighted at the cordial response that he had received from the members of the medical profession when he wrote to those connected with various institutions. This was in regard to a preliminary study of the management of foundlings and neglected infants from twenty-two institutions. Mr. Hart said he had forgotten the exact number, but it was not far from 40,000 and out of that number the death rate was about 40.5 per cent.

Many letters had been received by him which were very interesting as well as astonishing. From one party the statement was made that the mortality among the infants received during the last twenty years averaged, for each year, 75 per cent. Another party made the statement that the mortality among infants in this particular institution had been reduced from 100 per cent. to 30 per cent. In other institutions reports came back that the mortality had been reduced from high figures to practically the normal; in these institutions, however, the mother remained with and nursed her baby.

In certain institutions in Chicago, foundlings and neglected infants would not be received unless the mothers came with them; often they were asked to divide the milk they had with a baby not their own.

As a rule, baby statistics were entirely unreliable; to be reliable they should be made in an entirely different manner. All babies that went from an institution should be followed for at least twelve months to find if they were living or dead. Only in this way could reliable statistics be formed. In this country too much glory had been given infant mortality from certain sources. For instance, he had been told that "if a baby was going to die, the mother was sent for and the baby returned to her." This all meant that there should be a change in the methods of keeping statistics; this was absolutely necessary. The most reliable

method of keeping statistics he knew of was that introduced by the State Board of Charities of Massachusetts.

DR. FRANCIS H. GLACEBROOK, of Morristown, New Jersey, said the features of the Speedwell method which most appealed to him were as follows:

1. There is no limit to the age at which a child is received. Any little one from a day old is provided for.
2. There is no limit to the number of children taken. It is simply a question of sufficient funds.
3. There is no limit to their length of stay. We prefer to keep them until strong and healthy.

I want to correct the prevailing impression which is evident from the previous discussion that we are dealing with well babies. The Speedwell Society has no use for well babies. Our cases, most of them, are the severe types of malnutrition and to emphasize what Dr. Chapin has already said, the cases reported under one year, would have practically, all of them, died under hospital methods of treatment. While we take children who need care at any age, it is these young babies; suffering from atrophic and malnutritive diseases which we are most interested in. And it is in this class of cases that the Speedwell Society gets its best results.

We never return babies because they are going to die. We have seen such wonderful recoveries in what looked like hopeless cases, that even the foster mothers never give up hope. Out of nearly 1500 children treated since the beginning of this work, we have only sent back of our volition thirty-three. Most of these were cases which developed some condition which required hospital attention, and some of them were returned by the request of the parents, who, thinking they would die, preferred to have them die at home.

A very interesting point which I think worth mentioning is the fact that our babies suffer from very little diarrhea. During the past summer we did not have a case in those babies already in the society, and even those cases sent out to us from different hospitals with histories of persistent diarrhea improved very promptly. This is especially interesting as the hospitals from which these babies came to us are equipped with most modern methods of dealing with the feeding problem; and it is also an indication that something more than scientific feeding is necessary in the treatment of these conditions.

We have no specific method of feeding. Our babies are fed on the common sense plan. We usually continue the food that the baby is getting when it comes out to us. If, after a fair trial, this food does not seem to be the right thing we then change it as the condition indicates.

To show the character of the cases with which we are dealing, most of the deaths occur, in fact, practically all of the deaths occur during the first month of the babies' stay. If they survive this length of time they usually recover.

The pictures which we have shown are not picked cases. They are simply cases which have been taken from time to time for the purpose of advertising, in order to procure funds.

Our method of handling these cases is about as follows:

There are three employees; the Superintendent, or Matron, whose duty it is to find the homes, to get the babies and place them in the homes and to return them to their homes when well, and follow them up as much as possible. When she brings a baby out she gets what history she can, and notifies our trained nurse. The nurse sees the baby; copies the history on our record card, and reports the case to me. The nurse visits all the cases every day, superintends the feeding and general care and management; reporting to me as a rule every night and oftener when necessary. I usually make complete rounds once a week or oftener if necessary, and in the severe cases treat them as we would any child in private practice.

As to the difficulties of this work; occasionally we have trouble with a woman in getting her to carry out orders explicitly, but there is a demand for these babies. The \$12. a month which is paid to the woman for their keep is a good deal of money to them, and as we try to keep one baby and one older child in each family, this is quite an item to this class of women. In fact this part of the work is a charity in itself as there are many cases where the money received from the Speedwell Society has more than paid the rent and kept together these little homes. These women soon learn that unless they do as they are told that the babies will be taken away from them and many of them have been with us since the work started, nine years ago, and have proven by their results their ability to carry out and obey orders.

There are many features of this work which I have not time to talk about now. We should be most pleased at any time to have any one interested come out and inspect the homes and the work in general.

* DR. ROWLAND G. FREEMAN said there was no doubt but that there were many advantages attending the farming out of babies but the figures that had been presented accentuated the disadvantages of institutions and the advantages of boarding out, for instance Dr. Baker had stated that babies came to our institutions healthy and then became sick and died. He said that the exact conditions in these institutions were little understood. They all believed in the boarding out system and used this method as far as possible. Most of the children when sent to the institutions were far from well, many of them suffering from hereditary syphilis, and others from the result of neglect. The children that were boarded out were the best ones that had been sent to the institutions because these women would not take unpromising children, and the same was true of wet nurses, so that the best children were boarded out and the worst were left to the doctors to feed in the institutions, and the successful feeding of such children is a most difficult problem. Moreover, the boarded-out children, if

they do badly or become sick, are returned to the hospital, frequently dying there. This again diminished the mortality of the boarded-out children and increased that of the institution.

The figures presented, therefore, giving the relative mortality in children boarded out and in institutions need material qualification.

The ideal method would be to wet nurse the poor babies and artificially feed the better ones, but this system has not as yet seemed possible.

With regard to the so-called hospitalism, this did not exist in all institutions. The babies, in some institutions, did very well; and their mortality compared fairly well with that given from Morristown; even with artificial feeding they often showed a low mortality. For instance, recently there was an outbreak of measles in one institution with thirty-five cases and no deaths; at another time there were seventy cases and only two deaths. In this institution the windows were kept wide open. Hospitalism really meant suffocation.

The amount of money paid for the care of these babies in institutions was insufficient for the purpose. It was said that the cost of the care of one baby in some institutions was \$1.50 a day; while he believed, that it cost the city of New York \$1.07 a day at Randall's Island. The city of New York gives these institutions forty-five cents a day for every child under the age of two years, and thirty-five cents when they are over two years. These institutions are poor and the aid from the city wholly inadequate.

DR. HENRY KOPLIK was deeply interested in the subject under discussion and he appreciated the fact that any discussion on mortality figures was very unsatisfactory and very unfair. They had better postpone any comparisons of mortalities until they could obtain proper weapons for calculating, *i.e.*, the birth records. There was a distinction to be made between the healthy baby of one year and the sick baby. Decided efforts should be made to get people to care for these infants. The subject of the evening was one that hospital men in particular were interested in. When a baby similar to the atrophic babies of Chapin was admitted to the hospital wards, it was apparently a hopeless task to attempt to feed it; ones courage failed; one could hardly do anything for the baby. Dr. Chapin's plan was the best and it was a pity that it was not in more general use. In the hospital wards, a patient who was cured of an enteritis became atrophic if retained and if they lived they would be atrophic; if sent to their homes, they relapsed. Some babies disappear from one hospital to turn up in another; thus they go from one institution to another abandoned finally by the parents.

The plan of Dr. Chapin's Dr. Koplik believed to be an ideal one. The great problem that confronted them all was, what were they to do with the babies after their discharge from the hospital.

DR. SIDNEY HAAS called attention to the relative cost of maintaining babies in institutions and said that institutions could not

be run on a pay of twelve dollars (\$12.00) per baby per month. The cost per child should not be less than five dollars (\$5.00) per week.

DR. CHAPIN closed the discussion. He said that these 241 babies under six months would have died in institutions with every window open, so that 60 per cent. figure was all to the good especially among young babies. The average time the babies remained in the homes was about four months; they were kept there until they were really better. Among 1386 cases, the average time they were cared for was four months. What they wanted to know was just how such a system would work out and, after eight years experience, they were able to report favorably. Some photographs showed infants atrophic and under-nourished as they were sent out from the institutions; other pictures showed the marked improvement after an average of four months farming-out.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Responsibility of the Tonsil in Tuberculous Adenitis.—Frank S. Mathews (*Am. Surg.*, Dec., 1910) records the results of his examination of sixty-five tonsils recently removed. Of these fifty-seven tonsils of patients not clinically tuberculous showed no tuberculous lesions. Of eight patients with cervical adenitis the tonsils were tuberculous in five. In two there was evidence of other than tonsillar origin for the infection. In one the adenitis was of long standing and may have been extratonsillar in origin or slight tonsillar lesions may have escaped observation. As illustrating the probability with which we can infer the point of infection from the location of the first involved node, the writer reports the following case: A child, aged four, had tuberculous nodes on the right side in the tonsillar and submaxillary regions. A submaxillary node was suppurating. There was a red spot on the upper gum, at the insertion of the second incisor tooth, about $\frac{1}{4}$ inch in diameter. This little piece of gum was removed at the same time as the nodes and showed typical tuberculous lesions. This is the only case in which he has demonstrated a tuberculous gingivitis as the starting point for tuberculous adenitis. In this case the tonsils appeared normal and were not removed. The writer believes that with a recognition of the frequency of tonsillar infection we shall probably more frequently remove the tonsil in cases of cervical adenitis than has been done in the past with the idea of avoiding reinfection of neck nodes. That we have been

able to cure so large a per cent. of gland cases without removing the tonsil is simply another illustration that we do not cure surgical tuberculosis by removing every single bacillus and lesion but by reducing the load of infection with which the body must contend. If the tonsils and nodes are both to be removed, it would not seem wise to attempt both at one sitting. Which shall be done first will probably have to be decided on the merits of each case. We have seen the nodes largely subside on removal of the tonsils alone; in other cases the extensive involvement of such nodes makes their removal much more important than that of the tonsil.

Pathology of the Thymus.—A. B. Marfan (*Arch. de méd. des enf.*, Nov., 1910) says that the location of the thymus causes it to exercise pressure on important organs in cases of hypertrophy. It is enveloped in a thin membrane adherent externally to the neighboring structures, but loosely connected with the organ itself, so that while total ablation of the thymus is a difficult operation, enucleation is easy. Early in intrauterine life it appears as two tubes of epithelium arising from the third branchial cleft. It increases in size up to birth, and remains of some size up to two years of age, when it gradually atrophies. At birth it is a hemolymphatic gland. Its period of full activity is during the first months after birth. It increases in size in a number of diseases, especially the various infections. The most common lesion is a simple hyperplasia of the elements of the gland resulting in hypertrophy. The cells become increased in number and thus the whole organ enlarges. In many cases there is a marked hyperemia. Congestion plays an important part in the accidents connected with the thymus. All the infectious diseases, diphtheria, erysipelas, variola, measles, and infectious purpura cause hypertrophy of the thymus. The chronic infections, such as tuberculosis and syphilis, determine hyperplasia of the gland. Its hypertrophy frequently accompanies rachitis. The author believes that hypertrophy of the thymus and rickets have a common cause, chronic infection or intoxication. Hyperplasia of the thymus is seen in simple and in exophthalmic goiter, myxedema, acromegaly, Addison's disease, tetanus, etc. It is seen in cyanosis from congenital malformation of the heart. With hypertrophy of the thymus the child has attacks of congestion which cause compression of the trachea and other organs beneath it. These symptoms are found under usual conditions only during the first two years of life. Sclerotic atrophy may be seen much less frequently. Other lesions of the thyroid may be mentioned, abscess, tuberculosis, syphilis, neoplasms, apoplexy. The hypertrophic thymus may cause symptoms in ways, by causing compression, and dyscrasia or toxemia with hypertrophy. The author believes that by percussion he can map out accurately the location and size of the thymus. Radioscopy and radiography give a shadow of the gland that is elongated and bottle-shaped. When hypertrophy

occurs the shadow enlarges and becomes more opaque. The value of this means of diagnosis is very great. Dyspnea is a common occurrence in hypertrophy of the thymus. It may be chronic with paroxysms, or acute and rapidly fatal. The stridor is heard in both inspiration and expiration, but is more marked in inspiration. The larynx pressed upon by the gland does not descend in inspiration. In the chronic form paroxysms appear without appreciable cause, or may be brought on by anger, crying, or hyperextension of the head. One peculiarity of this dyspnea is that it is not relieved by tracheotomy or by the introduction of a short tube, but may be relieved by a long tube which descends below the gland. The voice is not affected in this form of dyspnea. Bronchitis is frequent in these children. The gland sometimes causes asphyxia in the newborn. All the symptoms mentioned arise from compression of the trachea by the gland. Autopsy has shown the trachea flattened by the gland. A partial or total extirpation of the thymus has at once relieved this dyspnea, and tracheoscopy has shown a flattened trachea. Vascular compression may be shown by turgescence of the veins of the neck, bluish color of the face, and tension of the anterior fontanelle. Sudden death has been caused in this condition by syncope, preceded by nervous phenomena, dyspnea, and cyanosis. It may occur in the midst of surgical anesthesia. Dyspnea may be chronic, in the form of congenital stridor, it may be paroxysmal, with periods of normal respiration between, and it may occur suddenly with rapidly fatal result. Treatment includes radiotherapy in chronic cases; surgical extirpation when there is time for such operation; and introduction of a long tube when dyspnea is urgent.

Thyroid Insufficienciyand Adenoid Vegetations.—J. Delacour (*Méd. moderne*, Oct. 29, 1910) states that from our patients who come for adenoid operations one can often elicit a history of appendicitis or muco-membranous enteritis. He has seen families of three and four children who all had adenoids, and who had also hypertrophy of the appendix. The adenoid hypertrophy is the consequence, not the cause, of preexisting nutritional troubles. The pharyngeal and adenoid tonsils are glands of internal secretion, a secretion which is very active even in a normal condition. When there is a pathological condition the toxicity of the secretion is much increased. A simple hypertrophy of the tonsil may bring about a marked condition of intoxication. An example is given occurring in a man who had a very large right tonsil, and whose condition was thoroughly cachectic. Removal of the tonsil cured him. It is probable that hypertrophy of the tonsil is in relation with the condition of the hypophysis. We must admit that the removal of a pathological pharyngeal tonsil may have a favorable influence on certain glands, especially the thyroid.

Semeiology and Pathogenesis of Hysteria in Children.—A. Remond and P. Voivenel (*Méd. moderne*, Nov. 3, 1910) say

that the modifications of the organism in the course of development favor the disappearance of all troubles by simple evolution, and that hysteria is rare in children. Nevertheless it occurs, and the disequilibrium of the intestinal processes is one of the provocative agents. The part of the nervous system that is developed most up to the adult type is the sympathetic. This enables us to comprehend the importance of the reflexes that arise from the sympathetic, and the intensity and importance of the vasomotor reactions. This sensibility of the vascular mechanism is the second factor in the pathogenesis of hysteria. A third factor is the condition of the spinal cord; the connection between the splanchnic ganglia and the skin surface, the relations between the cells of these ganglia and the horns of the spinal cord, and the connections between the anterior horns and the non-striated muscular fibers constitute a reflex arc; there is a special reactivity which explains the ease with which contractures of the limbs and paralysis take place by irritations of the anterior horns. To this exaggerated reaction may be ascribed the convulsions of infancy, spasmodic vomiting and constipation, and meningism. A fourth factor is the condition of the brain. The centers of sensitivo-sensorial projection are highly developed while the psycho-motor tract is less so. The psychic are least developed of all. If hysteria is a dissociation of the personality there is an anatomo-physiological condition very favorable to neuroses. The associations of subconsciousness play an important rôle because the superior centers are little developed. The importance of the sympathetic explains the prominence of the vaso-motor phenomena such as sweating, edemas, eruptions, meningism, nightmares, palpitation, and tachycardia, while anorexia, gastralgia, incoercible vomiting, peritonism, and pseudo-appendicitis form a part of the symptoms shown. From the relative independence of spinal cord and cerebrum results the ease of occurrence of convulsions, tremblings, contractures, choreiform phenomena, astasia-abasia, and localized paralyses. This condition results from the inequality of the development of the different centers. It accounts for the ease with which hysteria appears and disappears. True delirium is very rare. We may thus comprehend the provocative agents of hysteria in the child, which are chiefly nutritional failures and emotional elements.

Scarlatinal Cirrhosis, Does it Exist?—Réné Banard (*Tribune méd.*, Oct. 22, 1910) says that the existence of a cirrhosis due to scarlatina has been much discussed and by many authors is denied. It has been said that in every case of cirrhosis we must eliminate three factors, syphilis, tuberculosis, and alcohol, before we take up that of scarlatina, and that it is almost impossible to be sure that any given patient has never had any of these three factors. The author describes a case in a woman of forty-seven years of age, in whom it was almost absolutely certain that syphilis, tuberculosis, and alcoholic excess were absent.

She had scarlatina at the age of twenty-four years, and lost two of her children at that time by the same disease. She had a marked atrophic cirrhosis when seen. In this case it seems more logical to ascribe the cirrhosis to the infectious disease, than to another disease that was probably absent. The author goes over the cases of cirrhosis reported after scarlatina, and draws attention especially to one that occurred in a child of nine, who at the same time that her brother had a true scarlatina, had an angina, followed by digestive derangements and icterus. She died after about six months, and autopsy showed annular perilobar sclerosis, with conjunctive penetration between the trabeculæ, as is seen in hypertrophic cirrhosis. This case was reported by Bingel, who thinks that it is the parenchyma of the liver that reacts to compensate necrosis due to the disease, and thus we get cellular hypertrophy, nodular hyperplasia, and nodules in mitosis. Scarlatinal cirrhosis is a simple alteration of the parenchyma, with an interstitial reaction, a degree further advanced than that of the ordinary changes seen in the disease. Between the hepatitis that is ordinarily seen and the cirrhosis there is a difference only in the intensity of the lesions. In acute hepatitis we see cellular alteration and leucocyte infiltration; periportal infiltration, perilobular and triangular penetration of the connective tissue represent the first stages of cirrhosis. There is no especial typical scarlatinal cirrhosis, but this infectious disease causes the same sort of changes as do syphilis and tuberculosis. A period of hepatitis is followed by one of cirrhosis when the process continues beyond convalescence. The end is cachexia, ascites, and death.

Clinical Condition of the Liver in Scarlet Fever.—Wilhelm Hildebrandt (*Münch. med. Woch.*, Nov. 29, 1910) says that in the greater number of cases of scarlet fever there is a pathological increase in the elimination of urobilin, the amount of urobilin following the temperature in its rise and fall. In convalescence from scarlatina the increase of urobilin in the urine is found to have ceased. There are two possible causative factors in this urobilinuria; either it is a result of hemolysis, or there is an acute parenchymatous hepatitis due to scarlet fever. The hepatitis may be a primary cause, and the hemolysis a contributory one of this condition. In severe cases there is a parenchymatous liver degeneration similar to acute yellow atrophy. Hoppe-Seyler states that fatty degeneration of the liver may occur in severe cases of scarlet fever. The presence of severe urobilinuria in a case that may be any one of the infectious diseases of childhood favors scarlet fever as a diagnosis. In diphtheria urobilinuria is rare, in measles it never occurs. The occurrence of a severe nephritis may cause the urobilin to be retained through failure of elimination. The author gives illustrative cases. Urobilinuria in convalescence indicates a prolonged rest in bed with such nourishment as is needed to repair the parenchymatous process in the liver. As to prognosis, a severe parenchy-

matous process in the liver is a ground for a bad prognosis. The pediatricist should always examine the urine of a scarlet-fever patient carefully for urobilin on account of its diagnostic and prognostic value.

Transmission of Anaphylaxis from Father or Mother to Child.—Ferdinand Schenck (*Münch. med. Woch.*, Nov. 29, 1910) details experiments on animals to demonstrate the transmission of anaphylaxis from parents to children. Of twelve newborn animals all reacted positively after the parents had been injected with horse serum. Out of three females injected with horse serum and diphtheria antitoxin all the children reacted. Of six cases in which mother and father were injected with antitoxin, and 14 days later cohabited, four of the seven offspring reacted positively. That the anaphylaxis was intrauterine was indicated by the fact that the anaphylaxis was shown immediately after birth. Of forty-five offspring of an anaphylactic male and a normal female animal six showed anaphylaxis, and nineteen were sick. The author thinks that he has demonstrated a congenital condition of anaphylaxis in these animals.

Radiotherapy in Acute Adenitis.—F. Jaugeas (*Presse méd.*, Oct. 18, 1910) says that a quick and permanent lymphatic reaction is obtained by the action of the x-rays on the lymph nodes. By their use symptoms may be allayed in adenitis and there will be no operative scar. A retrocession of glandular hypertrophies is soon obtained. The effect is most marked in tuberculous adenitis which resists medical measures. Monoglandular hypertrophy is especially well affected by the rays; when a number of glands join in forming a mass of tissue, as a result of the periadenitis the involution is slow, and the mass disappears less completely. Regression depends on the destruction of the lymphatic elements, while after periadenitis considerable connective tissue is not absorbed. In cases of caseous transformation with softening the purulent collection must be evacuated since it cannot be absorbed. Capillary puncture or expression of the contents through a narrow orifice must be done first. Radiotherapy is the first choice in tuberculous adenitis, especially in the early stage. The esthetic results are very much better than when operation is undertaken. An operation will remove only a certain number of glands, while others may later hypertrophy and the deformity reappear. With the x-rays all the glands in the neighborhood are so affected that a recurrence of the disease in neighboring glands is prevented. It is a mistake to use a small dosage of the rays, since an aggravation may be caused rather than relief of the condition. A fairly strong dose must be used and it will need fewer repetitions.

Gangrene of the Leg Following Diphtheria.—J. D. Rolleston (*Brit. Jour. Child. Dis.*, 1910, vii, 529) records a case of gangrene of the leg in a boy of thirteen during convalescence from diphtheria. Recovery followed amputation. The accident is attributed to embolism. An organizing clot was found in the popliteal

artery. The writer has collected from the literature ten other case of gangrene after diphtheria. It is noteworthy that in only one of the eleven cases had antitoxin been employed.

Functions and Utility of the Tonsil.—Gabriel Hicguet (*La Policlinique*, Nov. 1, 1910) says that specialists who have written works on the physiology of the tonsil have failed to support their theories on a scientific basis. The normal tonsil is one that has never been the seat of disease and it goes through a progress of retrogression, and finally becomes rudimentary. An abnormal size is attained only after repeated attacks of inflammation. When enlarged its utility may be questioned since it is a pathological organ. The author examines the functions and utility of the tonsil without writing a physiological treatise. The simplest conception gives no function to the tonsil. Tourtal thinks that the tonsil is a means of lubricating the passage of the food. Hingston Fox makes it an organ of resorption of superfluous saliva. Another conception ascribes to the tonsil an internal secretion. The doctrine that the tonsil must be of use because nature has created it is specious because it inevitably atrophies when normal. Allen believes the tonsil takes the place of the thymus when the latter atrophies. These glands are composed of lymphatic tissue and crypts lined with epithelium. A new formation of leukocytes in them has been proven. Brieger thinks that these leukocytes are brought to the surface by the fine lymphatic tubes and this continual irrigation prevents entrance of bacteria. Fraenkel has observed that children with hypertrophied tonsils are less liable to diphtheria than others. The author believes that we have found but two tenable theories; at present we are not able to affirm that the tonsil is or is not a useful organ, or a harmful one. It is the seat of leukocyte formation, active especially in the follicles, by mitosis of the epithelioid elements. Two theories seem of possible value: first, that it is an organ of defense, applicable to the healthy organ; second, that it is a cause of infection, applicable to the pathological organ.

Functions of the Thymus.—E. Weill (*Lyon méd.*, Nov., 1910) gives a study of the functions of the thymus, showing that it is an organ composed of lymphoid and glandular tissue, arising from the budding of the entoderm at the third branchial cleft. From the beginning of the fourth month of embryonic life to the end of the fourth year it has important action in the system. At birth it is in great part a lymphoid organ with a covering and a reticulum filled with leukocytes. Its structure is similar to that of the bone-marrow. There is a true balance between the development of the lymphoid and the epithelial elements. Injection of extract of the thymus causes a fall of arterial tension. The thymus differs notably from the lymph nodes in its chemical composition. Removal of the thymus in an animal causes a primary stage of obesity and edema, followed by one of atrophy and cachexia. The organ is not indispensable to life because after a certain period it naturally disappears. Its functions are easily replaced

by the action of the genital organs, suprarenals, thyroid, hypophysis and spleen.

Necessity of the Removal of Adenoids and Hypertrophied Tonsils.—J. N. Roy (*Jour. de méd. et de Chir.*, Nov. 26, 1910) states that it is necessary to operate on cases of adenoid vegetations for the following reasons: we can prevent adenoid athrepsia, arrest of development of the bones of the face and thorax, infections of the respiratory tract, inconveniences of obstruction of the nose, the dangers of mouth-breathing, infections of the ears and deafness, reflex nervous troubles, infectious diseases, and retardation of intellectual development. Removal of the tonsils avoids infections of the respiratory and digestive tubes, ear troubles, aggravation of diphtheria, reflex nervous troubles, and infection of the glands of the neck. The nose has for its offices the removal of impurities from the inhaled air and raising the temperature of the air before it reaches the lungs. The absence of nasal respiration causes the irritating particles and cold air, loaded with bacteria, to enter the lungs directly, thus increasing the tendency to respiratory infections.

Suppuration of Antrum of Highmore in Early Childhood.—W. C. Braislin (*Trans. Amer. Obst. Soc.*, 1910, xii, 1, 88) says that development of the maxillary antrum proceeds coincidently with the development of the superior maxilla and other bones of the face, the size of which, independently of the child's age, may be superficially inferred from the appearance of the external features. The unerupted teeth within the superior maxillary bone occupy space which prevents a full development of the maxillary sinuses to their full size until after the eruption of the third molars, or wisdom teeth. At an early age, even immediately after birth, the maxillary antrum is capable of becoming infected and thus the seat of abscess. The close relationship of the eruption of the teeth to the development of the maxillary sinus is worth bearing in mind, since the more teeth already erupted, the larger the antrum of Highmore will be found. In operations on the maxillary antrum in early childhood, the nasal route would seem the most natural and accessible one, since the antrum, though small, is readily located just exteriorly to the attachment of the lower turbinate between this point and the inner lower wall of the orbit. Practically, however, due to the intranasal space being so encroached upon by the crowded turbinates, the preferable route is that through the canine fossa as close to the wall of the orbit as possible. In opening into the maxillary antrum through the canine fossa, because of the close relationship of the unerupted teeth and its small size, its relationship may be well located, especially the supraexternal wall, by its close proximity to the wall of the orbit. Edematous conditions of the eyelids, with or without purulent discharge from the eye, purulent discharge from the nose, or a history of recent purulent nasal discharge, should be considered with reference to the possibility of abscess of the antrum of Highmore.

Present Status of the Adenoid Operation in Children.—Analysis of 217 replies to a circular letter sent out by E. T. Smith (*Trans. Amer. Obst. Soc.*, 1910, xii, 1, 100) indicates that the majority of physicians prefer to use a general anesthetic when performing the adenoid operation; that ether is used by far the larger number of men; that most men prefer a light anesthesia. Fully four-fifths of the operators favor some form of recumbent position. Most physicians insist on thoroughly exploring the nasal pharynx with the finger at conclusion of operation. The majority use both forceps and curets of different makes, but there is a tendency toward the use of the curet alone. After-treatment is a simple affair with most men, the important points being rest, light, diet, and the maintenance of nasal respiration. Recurrence is rare, after thorough operation, except in children with lymphoid tendency.

A Lavatory for Each Class, and Obligatory Hand Washing in Schools.—Van Lint (*La Policlinique*, Nov. 15, 1910) says that one of the necessities in a modern school is running water in every school-room, in order that the hands of the pupils may be frequently washed. The child comes to school with clean hands and he should be sent home in the same condition. The children handle all sorts of things, ink, paints, pencils, clay for modeling, chalk, clothing, etc. They touch their eyes, ears, and other parts of the body as well. There is also danger of carrying disease germs from one pupil to another. By frequent washing the spread of infectious diseases will be lessened. In shaking hands when we meet our friends we hand to them all the germs that we carry on them and make them a present of all sorts of things. Frequent washing of hands is a necessity under these conditions, and especially for children who touch everything.

Morbid Associations among Children.—V. Hutinel (*Bull. méd.*, Nov. 26, 1910) notes the frequent association of syphilis and tuberculosis in children. These two conditions present great pathological analogies. Both organisms cause the production of granulations or masses of tissue and a distinction is not always easy. Syphilis tends toward sclerosis, tuberculosis to caseation. The reciprocal influence of these diseases is not easy to determine. Cavities in the lungs of children are somewhat rare at autopsy. They are of two kinds: large, formed by the caseation of a whole lobe of the lung, without any tendency to fibrous formation, or with fibrous walls. Cavities of slow formation occur in syphilitic children. The pus contains tubercle bacilli in large numbers mixed with caseous detritus. Still the aspect of the walls recalls the bronchial dilatations and interstitial pneumonias of syphilis. Syphilis has manifested its tendency to sclerosis in the walls of the cavities, while the tubercle bacillus has determined the caseation of the contents. Another association may be seen in a combination of lymphatism which is mixed with caseation, that is, arthritism and tuberculosis affecting the same subject. When scarlatina attacks an infant which has syphilis the glands resist with

difficulty the action of the streptococci, and immense glandular abscesses form.

Orthopedic Treatment of Spinal Paralysis.—F. Lange (*Arch. Ped.*, Nov., 1910), in speaking of anterior poliomyelitis, earnestly recommends in the acute stage the immediate fixation of the trunk in an orthopedic bed or by plaster-of-Paris jacket. After the acute stage the indications are to restore paralyzed muscles and to prevent contractions. The nourishment of an affected muscle can be favorably influenced by electricity, massage, and air or water baths. Rough, hard massage, especially deep, firm, stroking massage should be especially avoided as it may injure the paralyzed muscle. Apparatus to prevent contractions must be used with great discretion lest pressure results in atrophy. For example, with paralysis of the tibialis anticus and posticus the writer uses only a celluloid support, reinforced with steel wires, which brings the foot into a relative supinated position and prevents the sinking of the arch of the foot; for use during the night, an internal splint of similar constitution, which fixes the foot in a stronger supinated position and relieves a shortening of the pronating muscles which possibly may have taken place during the day; the stiff shell is without lacing and avoids all pressure on the paralyzed muscles. If deformity is present redressment with or without tenotomy is the first step. Of the subsequent procedures, nerve transplantation, arthrodesis, and transplantation of tendons. The writer speaks most favorably of arthrodesis in cases with complete paralysis of the muscles of the leg and foot. Usually, however, he seems to favor tendon transplantation with the use of paraffin-sublimated catgut tendons which he claims never subsequently become infected.

Early Operation for Psoas Abscess.—J. K. Young (*Univ. Penn. Med. Bull.*, 1910, xxii, 539) states that when mixed infection occurs in psoas abscess early operation is preferable to late, as it gives quicker and better results. In performing early operation for psoas abscesses, the transverse process of the third lumbar vertebra is an important guide to the psoas muscle in the lumbar region. If the operation is not performed early the entire psoas muscle becomes filled with pus, and if this pus gets below Poupert's ligament, drainage is difficult, even when through-and-through drainage is established. The packing should be removed early to encourage prompt closing of the wound.

Malignant Rhabdomyoma of the Vagina in Children.—C. J. Miller and F. B. Gard (*Surg., Gyn., Obst.*, 1910, xi, 391) say that a tumor is occasionally met with in the vagina of infants, characterized by rapid growth and the development of polypoidal masses projecting into the lumen of the vagina. Histologically this tumor is found to be composed of embryonic striped muscle tissue, hence a rhabdomyoma. Growth is by expansion and the neoplasm does not metastasize; as a result complete removal locally ought to result in cure. Such a tumor was observed by the writer in an infant aged two years and four months. The

first symptoms to attract the attention of the mother were slight straining during defecation, and a vaginal discharge which gradually increased and became quite offensive and then blood-stained. Examination suggested a diagnosis of severe gonorrheal vaginitis. Under ether anesthesia the hymen was dilated. There immediately poured forth 2 or 3 ounces of foul, purulent fluid, containing friable, gelatinous, reddish-gray masses, some of which protruded from the vulva but still hung by fragile pedicles. The vagina was found to be dilated to the capacity of the pelvic capacity by the tumor mass. About 4 ounces of the mass was twisted, scraped and wiped away, and wherever the base of pedicles could be reached the actual cautery was applied. After forty-eight hours the slight septic temperature declined and she rapidly gained weight and was free from symptoms for five weeks. Then the discharge returned and the mother noticed that she urinated with difficulty. Upon examination it was found that not only was the vagina filled, but that a movable mass reaching almost to the umbilicus was palpable over the abdomen. After opening the abdomen no evidence of extension beyond the vagina could be detected. The entire vagina, uterus, and appendages were removed. Six weeks after the operation the vaginal discharge returned and soon became fetid. The abdomen gradually enlarged and became sensitive above the pubes. The temperature began to range between 99 and 101°. The inguinal glands on both sides became enlarged and sensitive, apparently the result of infection. She rapidly declined and died. No autopsy.

Appendicitis in Children.—Isaac Wood (Publication No. 2, Medical Faculty, Queen's University, 1910, 24) states that appendicitis occurs in children much more frequently than is generally supposed and presents certain differences from this disease in the adult. The appendix in the child is relatively larger and longer. The walls are thinner, the meso-appendix is shorter, often less than half the length of the tube. This tends to kink or bend the appendix and to limit the blood supply, especially to the distal half. The entrance from the cecum is funnel-shaped, the lumen is larger, the mucous membrane smoother and the valve of Gerlach often absent or ineffective, hence foreign bodies of morbid materials more readily find their way into the tube. The lymphoid tissue in the appendix of the child is more abundant and the blood supply is poor, hence destructive processes go on more rapidly and the liability to gangrene and perforation is greater. The omentum is relatively smaller and less effective in walling off a gangrenous or perforated appendix. These inflammations of the appendix induce a greater effusion of serum in children than in adults, and this effusion quickly becomes purulent. The occurrence of gangrene and early perforation is more frequent in the child. Abscesses are more likely to form and to rupture in children than in adults. There is greater tendency to spreading peritonitis. Intoxica-

tion of the system is more rapid and intense. Appendicitis in the child is more sudden in its onset, rapid in its progress and intense in its symptoms than in the adult. The unstable conditions of the nervous system peculiar to children may lead to confusion or error and may delay or prevent a positive diagnosis. Abnormal conditions are frequently met with in children which render the clinical phenomena vague and misleading, for example, right-sided pleurisy or pneumonia may simulate appendicitis—the pain, tenderness and rigidity being located in the right iliac fossa. Or in abnormal positions of the appendix, common in children, the pain and other symptoms may be found on the side of the abdomen, in the epigastric region, or under the costal left arch.

H. C. Deaver (*Jour. Amer. Med. Assn.*, 1910, lv., 2198) analyzes 500 cases upon which he has operated. He finds that appendicitis in childhood occurs with increasing frequency from birth to puberty, and is more common in males. It runs a rapid and severe course in children more often than in adults. There is less tendency to the formation of strictures, but fetal concretions are more often found. Typhoid fever, intestinal catarrh and influenza may predispose to appendicitis. Other infectious or contagious diseases and nasopharyngeal troubles are hardly to be considered as etiologic factors. In infants the symptoms of acute appendicitis are often scanty, irregular and misleading. In older children, even more regularly than in adults, acute attacks occur suddenly and stormily. Chronic appendicitis represents a focus of chronic autotoxemia, with all its attending evils. All cases of abdominal trouble in children should be regarded as appendicitis until proved otherwise. Differential diagnosis must be made between appendicitis and intestinal catarrh or worms, right-sided pneumonia or sacroiliac disease, ovarian cyst twisted on its pedicle, mesenteric cysts, cystitis and rectal abscess. The prognosis in acute appendicitis is favorable if the case is received early and if the appendix is removed early. If the patient is operated on within the first twenty-four hours, the mortality is practically *nil*. After this time the prognosis rapidly becomes worse. In chronic appendicitis an acute attack with perforative appendicitis is always to be feared. In intraappendiceal appendicitis the appendix with the entire diseased tissue can be removed with nothing but benefit to the patient. Nonoperative treatment is indicated in cases of localizing abscess with diffuse peritonitis. Opium and purgatives are absolutely contraindicated. Cathartics must never be given unless it is absolutely certain that appendicitis is absent. Operation is even more suitable for children than for adults. The Fowler position must not be maintained for more than thirty-six hours in drainage cases, lest intestinal obstruction develop. Secondary abscess must be carefully watched for. It is revealed by a rise and continued elevation of temperature, with high leukocyte count and local signs. Drainage is to be employed only when the exudate is purulent or in large quantity.

By its presence, it produces adhesions and predisposes to intestinal obstruction. Glass tubes may be broken or plugged by omentum. Rubber tubes are valuable for their pliability. Gauze drains well at first, but later retards drainage. A wet dressing is the best for absorption.

Prevention of Epilepsy, Psychopathies, and Idiocy by Care in Feeding and Hygiene of Infants.—Thiemisch (*Münch. med. Woch.*, Nov. 8, 1910) has studied the possibility of the prevention of idiocy, epilepsy, and psychoses in children by a careful system of diet and hygiene in the early months of life. There are statistics accessible with reference to epilepsy, showing that this is possible, but not for the other two conditions. Examination of school children has shown that those well cared for have larger heads than the weaklings. The amount and quality of the food has a marked influence on the resistance to disease. Gastrointestinal diseases lessen the power of resistance to infectious diseases of children. Skin diseases are much more frequent in such poorly nourished children. It seems likely that poor nutrition will also allow of general infections of the brain and nervous system. The best development will result from healthy parents, to whom children are born in the prime of life, and with a long breast nourishment. In cases of rachitis the size of the ventricle in the large skull may be a cause of easier development of meningitis. Of children who have had laryngeal spasm or convulsions in early life a large number show evidences of unusual irritability of the nervous system. Habitual headache, somnambulism, nightmare, blepharospasm, nocturnal enuresis, tremor of the hands, and other nervous stigmata were found in them. The author concludes that the careful nourishment and hygienic living of children is of the utmost importance in the direction of the correct development of the nervous system.

Inconveniences and Dangers of Cow's Milk from Animals Nourished with Industrial Residues.—E. C. Aviragnet (*Arch. méd. des enf.*, Dec., 1910) gives the results of clinical experimentation on the use of milk of cows nourished with industrial residues of various kinds. It has been found that such milk is capable of producing, in children nourished on it, intestinal troubles which are very rebellious to treatment and run a fatal course if the feeding is continued, but that are cured at once when the milk is stopped and a milk from some healthy source is substituted for it. The analysis of such milk shows no difference in composition from that of normal milk, yet the results of feeding show clinically that there is a difference. This difference depends on the presence in this milk of the poisonous products of fermentation which pass into the milk and affect the intestines of the infant. We know that even sterilized milk is not free from these toxins and causes similar intestinal trouble. Such experiences are similar to the intestinal troubles of infants which occur when the cows are first put out to pasture in the spring. Several kinds of residues from industrial pursuits are used for feeding cows. They are pulp from

beets used in the manufacture of sugar; brewer's waste, from the various grains used in the production of beers; waste from distilleries of alcohol; and residue from oil factories. The pulp of beets contains sugar and a large amount of water, and hence ferments very readily. It has an extremely bad odor when kept for any length of time, and contains many products of fermentation. The pulp from distilleries is acid from the use of sulphuric and other acids used to prevent lactic and butyric acid fermentation. They cause diarrhea in the cows, and also in the children fed on their milk. In distilleries the grains are fermented by diastase or acids. They contain much water, and nitrogenous principles. Oil cakes are made from the residue of grains and fruits from which oil has been expressed. In herds of cows fed on distillery waste tuberculosis is frequent. It causes functional intestinal disorder, skin troubles, weakness and fever, resulting in death unless cathartics are given and the food stopped. It is the toxins contained in these residues that are responsible for the bad effects on infants and also adults. It is known that frequent abortions occur among cows fed on beet pulp, and lambs fed on milk from these cows have a form of progressive weakness, ending in death. It is claimed by the producers that fresh residues have no bad effect on the milk, but experience shows that the bad effects, while less than those of old residues, are still present. Milk from cows fed on brewers' grains appears normal, but its taste is bad and the odor unpleasant; when boiled the milk becomes yellow, has a gruelly sediment, and is unpleasant in taste and odor. In infants this milk causes malnutrition, emaciation, intestinal catarrh, vomiting, fetid stools and fever. Stopping this milk immediately relieves the condition. It is the opinion of Marfan T. Variot and others that all these residues should be forbidden as food for cows which are to produce milk for the feeding of infants.

Nephritis in Children.—Arthur W. Bingham (*Arch. Ped.*, 1910, xxvii, 917) enters a plea for more regular examinations of the urine in children, especially after the acute infectious diseases. He says that it is customary to do this in cases of scarlet fever, but he questions whether it is faithfully carried out in measles, diphtheria, pertussis, varicella, mumps, influenza, tonsillitis, etc., though no one will deny the possibility of the occurrence of nephritis in such cases. To substantiate his contention he records a case of acute nephritis following influenza and a fatal chronic case after measles.

Infant Feeding.—T. N. Gray (*Arch. Ped.*, 1910, xxvii, 903) believes that the artificially fed child has as much to fear from falling into the hands of a physician who has never thought of its individuality, or from a mother who is willing to feed it a modification advised by one who has never seen it, as it has from bacterial contamination of milk. The essential points in infant feeding are the physical and functional individuality of the infant, the impossibility of finding a perfect chemical substitute for breast milk, and the necessity of making a modification to

fit, as nearly as possible, the unit, *the* baby in charge. Physicians should teach mothers, in view of the difficulty in arriving at an even approximately fit substitute for breast milk, the duty which devolves upon them and should themselves realize that knowledge of percentages, caloric values and chemical composition is wasted if applied in the form of routine formulæ.

Citrate of Soda for Vomiting of Infants.—G. Variot (*Rev. de. thér. medico.-chir.*, Nov. 15, 1910) advocates the use of citrate of soda for vomiting of infants whether breast fed or artificially fed. This remedy was first used to modify milk when it was not well borne, to make it more digestible. The author gives his personal observations made at the Belleville "Goutte de lait" and the Children's Hospital. Sodium citrate has been found to be perfectly harmless even when given in large doses and for a long period. It has an antiemetic effect in infants as well, regularizing the muscular action of the coats of the stomach. Although the lime salts are partially precipitated by the citrate of soda, a decalcifying effect is not to be feared. The author employed a solution in which each tablespoonful contained 25 centigrams of the drug. In any case of vomiting, whether due to too much or too little food, the drug is effective. In cases in which the milk of the mother appears not to agree with the child the vomiting is easily stopped, either by adding the citrate to the mixed feeding, or to the breast milk alone. Its action is almost immediate. It also has the effect of preventing the occurrence of infantile scurvy.

Night Terrors, their Nature and Prognosis.—G. Paul Boncour (*Prog. méd.*, Dec. 24, 1910) gives examples of night terrors which lead him to believe that the occurrence of these attacks is not due to any one cause, but results from many causes, being merely an indication of irritation of the nervous system. They are sometimes the result of a true lesion, but generally a purely functional trouble. Still the prognosis is not as entirely benign as has been supposed. More often than has been supposed there are present meningeal reactions which may pass away and result in a cure. A lumbar puncture will give the picture of meningeal irritation characterized by a lymphocytosis. Terrors are rarely an isolated symptom, being only one of a complexus of effects. Generally there is a series of crises, with agitation, instability, emotional phenomena, and psycho-motor incoordination. These attacks are visual hallucinations which form part of a delirious dream; the future mental condition may be imperilled. Their presence denotes a vulnerability of the cerebral cortex. Such children should be submitted to an appropriate intellectual hygiene.

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ORIGINAL COMMUNICATIONS.

INTRAMURAL ABSCESS OF THE UTERUS.*

BY
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New York City.

(With nine illustrations and three charts.)

THAT accumulations of pus within the uterine wall and dependent upon a puerperal or other form of infection are by no means of rare occurrence is well illustrated by the seven cases which I present to you in this paper, and yet in a careful search through the literature of this subject embracing practically all of the text-books and treatises on gynecology and obstetrics which are now before the medical public, I find that practically no attention whatever is paid to this condition. The only text-book in which I have been able to find any reference to it whatever is in the admirable work of Finley on "Diagnosis of Diseases of Women."

I believe that the explanation of this apparent oversight lies in the fact that this condition under discussion has been confused with other inflammatory disturbances of the pelvic organs and has in this way escaped the attention which it deserves. Von Franque in an excellent monograph ("Uterus Abscess and Metritis Vesecans," *Cent. f. Gyn.*, No. 20, 1892) reported in careful detail fifteen authentic cases, seven of the number depending for their origin upon an infection following child-birth. Noble published in the Transactions of the American Gynecological Society in 1906 a report of four cases of intramural abscess of the puerperal uterus which with four others occurring in his practice

*Read before the Society of the Alumni of Bellevue Hospital, February 1st, 1911.

made a total of eight cases coming under his immediate observation. In 1907 Mercadé (*Les Abscess de l'Uterus, Annales de Gynecologie et d'Obstetrique*, 1905, second series, vol. iv) after a very exhaustive study of the literature of the subject could find but forty-one authentic cases, twenty-two of these being of puerperal origin. Lea following the report of Noble's cases reported a case in the *Journal of Obstetrics and Gynecology of the British Empire*, February, 1904. This so far as I have been able to discover completes the literature of the subject up to January of last year, when Dr. John A. Sampson of Albany reported before the Sloane Alumni Society four cases of puerperal origin occurring in his own practice.

This admirably presented and well illustrated report was published in the March, 1910, number of the *AMER. JOUR. OBST.* I regard this report made by Dr. Sampson as the most valuable contribution to the subject that I have found. He has discussed with great care of detail the diagnosis and treatment of the four cases of his own which he reports.

I shall report here in detail seven cases which have come into my hands and attempt to formulate some conclusions about their diagnosis and treatment which I trust may be of some service. Six of these cases came under my care in Bellevue Hospital and the seventh in my service at the Har Moriah Hospital. All of the Bellevue cases were treated primarily by incision of the abscess and drainage, following laparotomy. The one at Har Moriah was treated by anterior colpotomy incision of the abscess and drainage. In two of the Bellevue cases in addition to the incision and drainage an autogenous vaccine (antistreptococcic) was administered under the supervision of the department of clinical pathology of Cornell University. These cases will be shown in detail. In the single case of gonorrheal infection a stock antigonococcic vaccine was employed.

CASE I.—Intramural abscess (streptococcus) near right uterine cornu following intrauterine operation two weeks after normal labor; character of operation unknown; incision, transperitoneal, suprapubic drainage, recovery.

Mrs. S. C., thirty-six years old, a native of Russia, was admitted to ward 23, Bellevue Hospital on February 15, 1910. Three months prior to the patient's admission to Bellevue Hospital she had been delivered normally of her sixth child. Following her delivery she progressed satisfactorily for a period of two weeks when she began to suffer from cramp-like pains in her abdomen with pain and swelling in her right inguinal region. She was taken to the Metropolitan Hospital where the inguinal abscess

was opened and where she was subjected to some intrauterine operation the nature of which she does not know. She remained there six weeks and left apparently cured. Two weeks later she

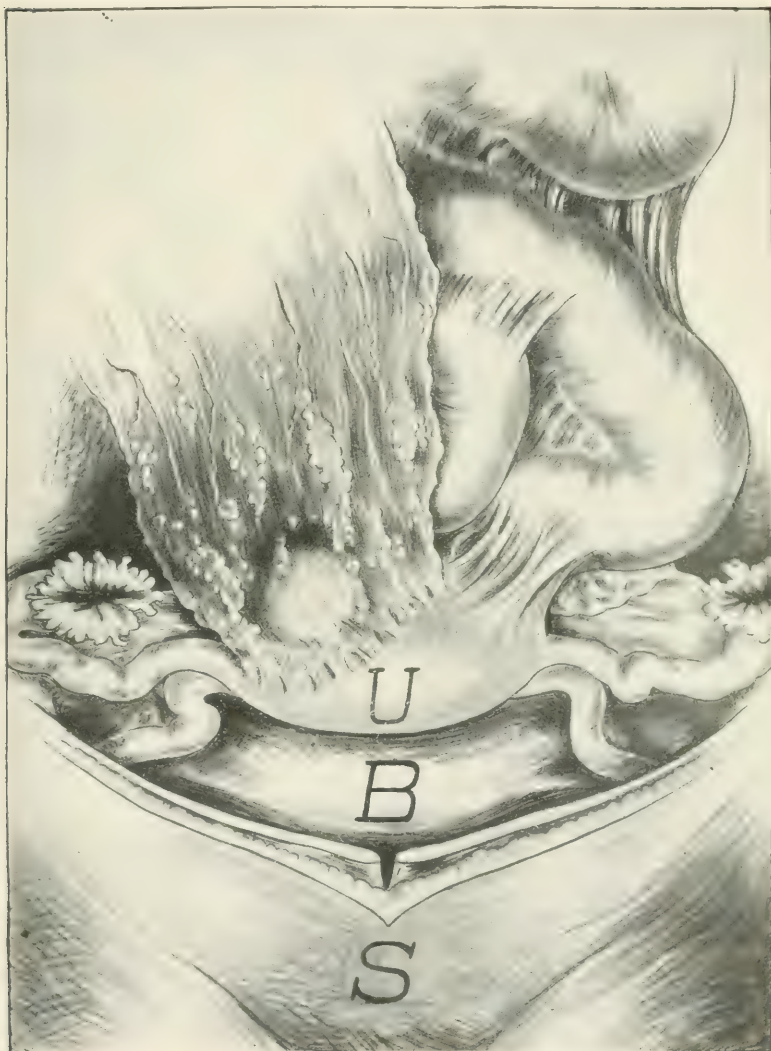


FIG. 1.—CASE I. Intramural abscess at right cornu of uterus.
Omental and intestinal adhesions intact.

began to suffer again from cramp-like pains in her abdomen which were much more severe in character than before, and at the same time a foul vaginal discharge appeared. The patient has

had no chills but at night has felt hot and has suffered from such severe pain in the pelvic region that she has been unable to sleep.

The physical examination is negative except the abdominal



FIG. 2.—CASE I. Omentum divided between catgut ligatures.
Intestinal adhesions undisturbed.

examination. The abdomen is distended and tympanitic, is very tender on pressure and rigid over the pelvic brim. A mass is palpable in the lower abdomen which seems adherent to the

uterus and the right side of the pelvis. The mass appears to be about the size of a large orange and on pressure a sense of fluctuation can be elicited. This is confirmed by vaginal examination,

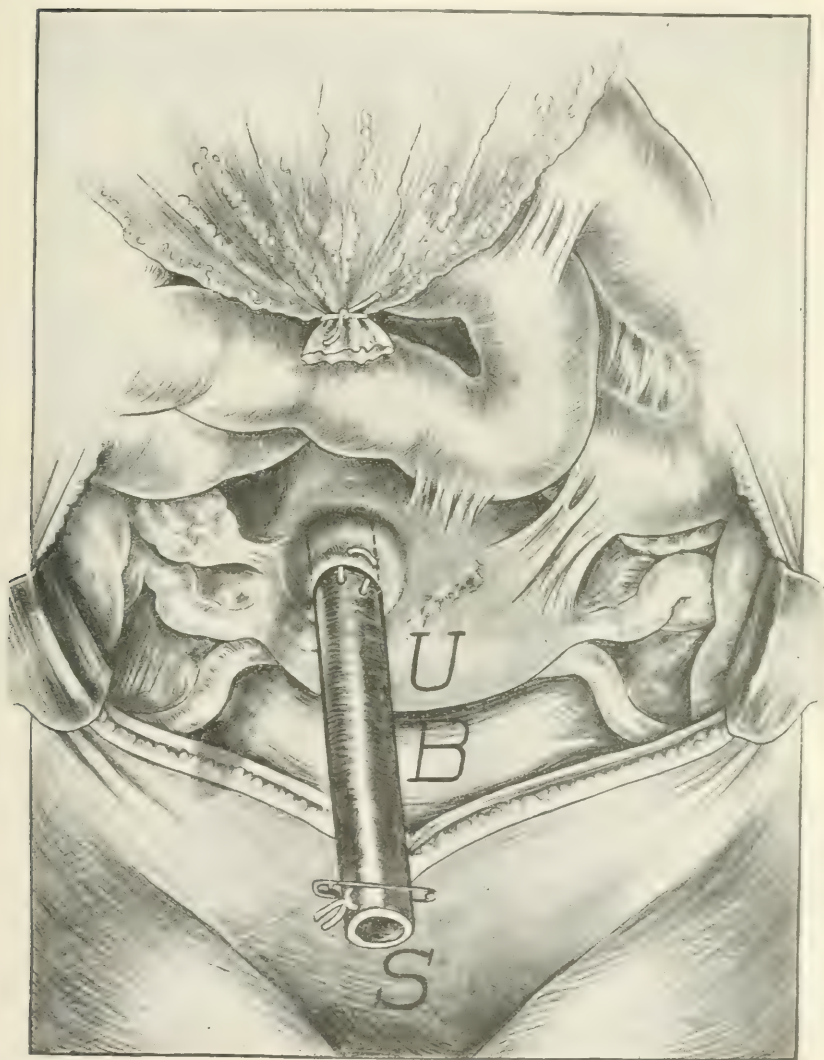


FIG. 3.—CASE I. Portion of omentum adherent over abscess removed. Cavity drained with rubber tube. Intestinal adhesions left undisturbed.

the uterus being markedly enlarged and fixed in its normal position. The blood count showed 15,000 leukocytes with 80 per cent. of polymorphonuclear cells. Vaginal and cervical smears

negative for gonococci. This patient was operated upon on February 29 by median incision. The right cornu of the uterus was the site of a single large abscess which was surrounded by extensive adhesions of intestines and omentum (Fig. 1). The adhesions of the omentum were freed and the omentum divided between cat-gut ligatures (Fig. 2), that portion immediately over the tumor being left undisturbed until the intestinal adhesions were freed sufficiently to permit of the walling off by bolsters of the field of operation. As the right tube and ovary were both involved in the inflammatory process and were considerably damaged by the separation of the adhesions, they were removed. The abscess cavity was drained by a large rubber tube and the neighboring peritoneal area by two cigarette drains, the three drains being brought out at the lower angle of the wound. This patient ran an irregular temperature for six weeks after the operation, but at that time was discharged well. Pelvic examination before discharge showed that the uterus had returned to its normal size and was freely movable in the pelvis without pain or tenderness.

CASE II.—*Intramural abscess (streptococcus) at right cornu six weeks after normal delivery, incision, transperitoneal, suprapubic drainage, recovery.*

Mrs. M. W., primipara, twenty years old, was admitted to ward 23, Bellevue Hospital on March 10, 1910, with the following history: Six weeks prior to her admission to Bellevue Hospital the patient was delivered normally of a full-term child without complications of any kind. She remained in bed for two weeks, but on getting up began to suffer from a constant pain and soreness in the right lower quadrant of her abdomen. This pain continued for two weeks when she went to the Women's Infirmary where she was put to bed and an ice-bag kept over the tender area. She had no discharge and no chills or other systemic disturbances, but was informed that she had an abscess which needed opening and was sent to Bellevue Hospital.

On admission her physical examination is negative except for slight tenderness without muscular spasm over the right iliac region where a mass about 4 inches in diameter can be felt, which is fixed to the uterus and pelvic wall. The vaginal examination shows the right fornix lessened by a mass from above which extends into the posterior fornix. This mass is hard, very tender, and gives a sense of deep fluctuation. The uterus is somewhat enlarged and fixed with the mass in the pelvis. A blood count shows a leukocytosis of 23,000, 83 per cent. of which are polymorphonuclear cells. Vaginal and cervical smears are negative for gonococci (Fig. 4).

Operation March 13. A posterior colpotomy was made but no pus was found. The abdomen was then opened by median incision. The omentum and intestines were found adherent to a mass which reached to the anterior superior iliac spine. The omentum and intestines being freed an intramural uterine abscess was revealed, involving a greater part of the anterior wall

of the uterus. The pus was evacuated by a free incision and drainage (transperitoneal and suprapubic) was established by means of the rubber tube and cigarette drains. The drains were

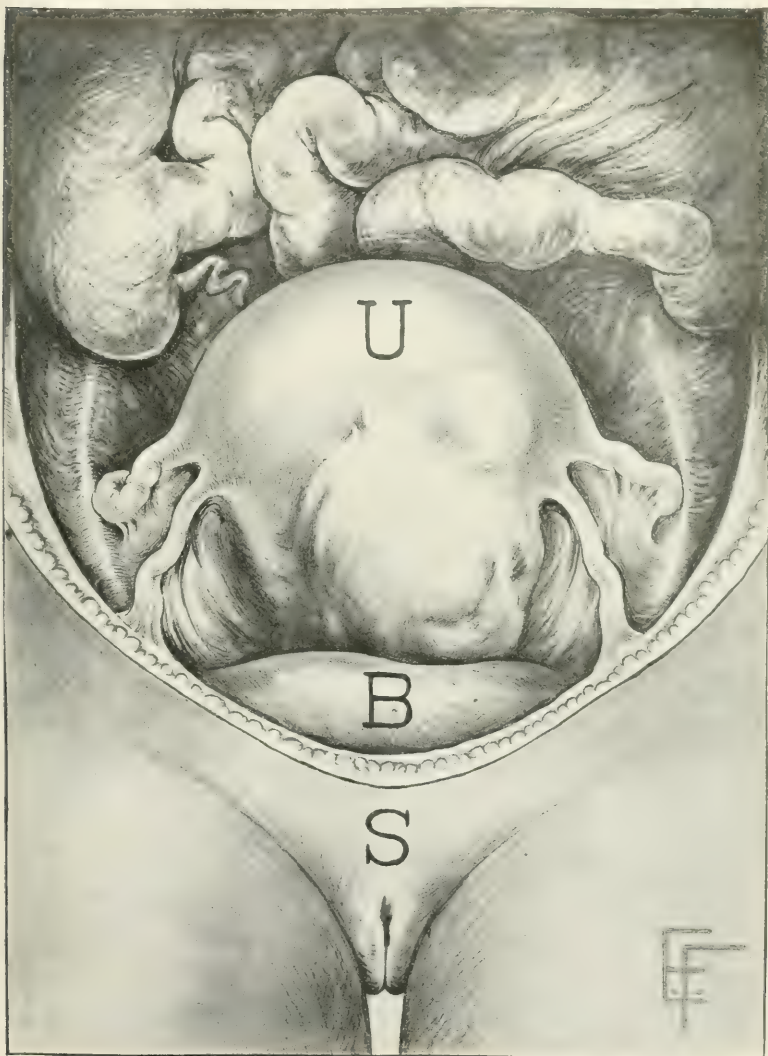


FIG. 4.—CASE II. Intramural abscess involving greater part of anterior wall of uterus.

removed on the sixth day, the sutures on the ninth day, and the patient was discharged on the twenty-fourth day, well.

CASE III.—*Puerperal (streptococcus) intramural abscess in*

left upper anterior portion of uterine wall dissecting anteriorly between the folds of the broad ligament to pelvic wall. Incision, drainage, recovery.

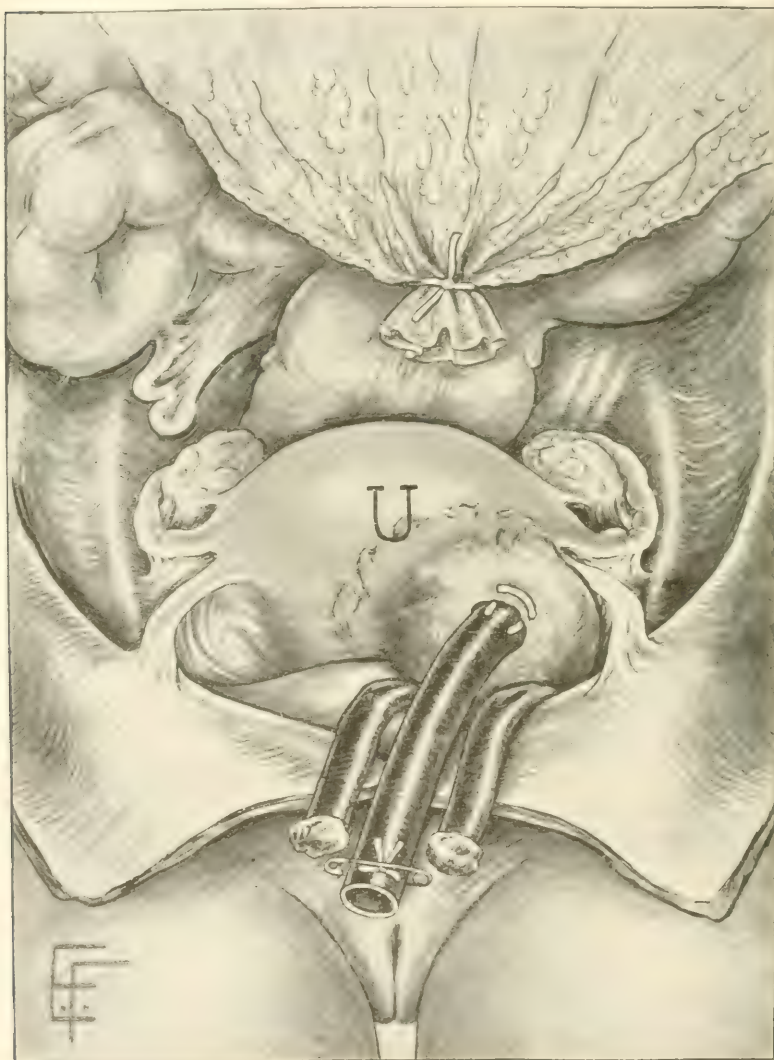


FIG. 5.—CASE III. Abscess in left anterior portion of fundus of uterus extending out to pelvic wall. Incision and drainage.

Mrs. M. B., eighteen years of age and mother of two children, was admitted to ward 23, Bellevue Hospital on March 14, 1910, with the following history: Her first child was born nine-

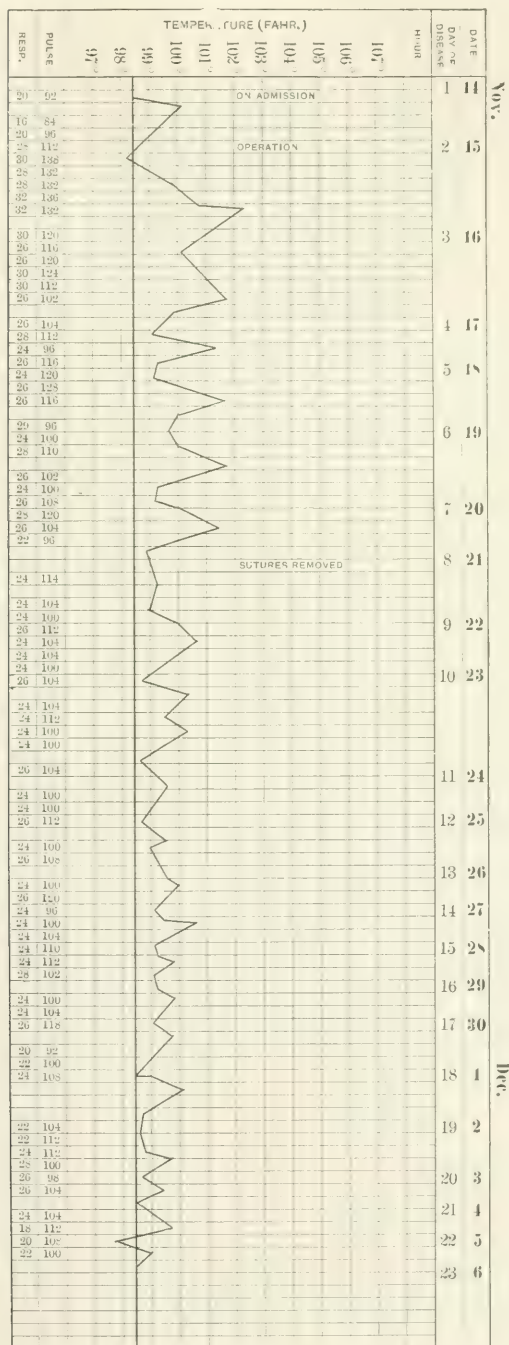


FIG. 6. CASE III. CHART OF M. B.

teen months prior to her admission. Her labor and puerperium were normal. She remained in bed ten days. Her second child was born six weeks prior to admission to the hospital. She was delivered instrumentally by a physician. The placenta and membranes came away intact. Four days after her labor she developed a high fever which continued for two weeks. She had no chills. From the beginning of the fever she suffered from severe sharp shooting pains in the lower left quadrant of the abdomen with marked tenderness. This continued until the physician covered her abdomen with a black salve (Crede's ointment), which relieved her so that she was able to be out of bed in a few days. Three weeks before her admission, that is, after she had been up and about for a week, the pains from which she had suffered after the birth of her child returned. They gradually increased in severity, being worse at night, were of a sharp shooting character and were located in the left iliac region. This pain is the only thing which she complains of.

Physical examination shows marked rigidity, tenderness and muscular spasm in the left iliac region. Vaginal examination shows the uterine body enlarged and crowded over to the right by a large tender mass at its left side. The blood count showed 18,000 leukocytes with 85 per cent. of polymorphonuclear cells. The cervical and vaginal smears were negative as to gonococci.

Operation March 23, 1910. Median incision, omentum much thickened and adherent over uterus, especially over left side and over left broad ligament. On separating the omentum an abscess was found in the upper left side of the fundus of the uterus dissecting anteriorly between the folds of the broad ligament to the abdominal wall. The uterus was freed and the abscess evacuated, the cavity of the abscess being lightly curetted and cauterized by pure carbolic acid followed by alcohol. Drainage was established by means of rubber tube and cigarette drains brought out at the lower angle of the abdominal wound. The patient made an uninterrupted recovery, the sutures being removed on the eighth day and the patient being discharged on the eleventh day following the operation (Figs. 5 and 6).

CASE IV.—*Puerperal abscess of anterior uterine wall (streptococcus), dissecting between uterus and bladder. Anterior colpotomy, vaginal drainage, recovery.*

Mrs. F. F., twenty-five years old, was admitted to my service at the Har Moriah Hospital on October 12, 1910 with the following history: She is the mother of nine children, eight of whom are alive and well. All of these were delivered normally without instrumentation. The puerperium was normal in each case until the last labor which occurred four weeks before her admission to the hospital. On the fourth day following a prolonged labor the patient experienced severe cramp-like pains in the right iliac fossa. This pain was distinctly localized and was practically continuous up to the time of admission. At the outset of the pain the patient had a severe chill followed by fever and sweating.

Since that time she has had several similar attacks of chills, fever and sweating. She has had no vomiting. Her bowels have been constipated.

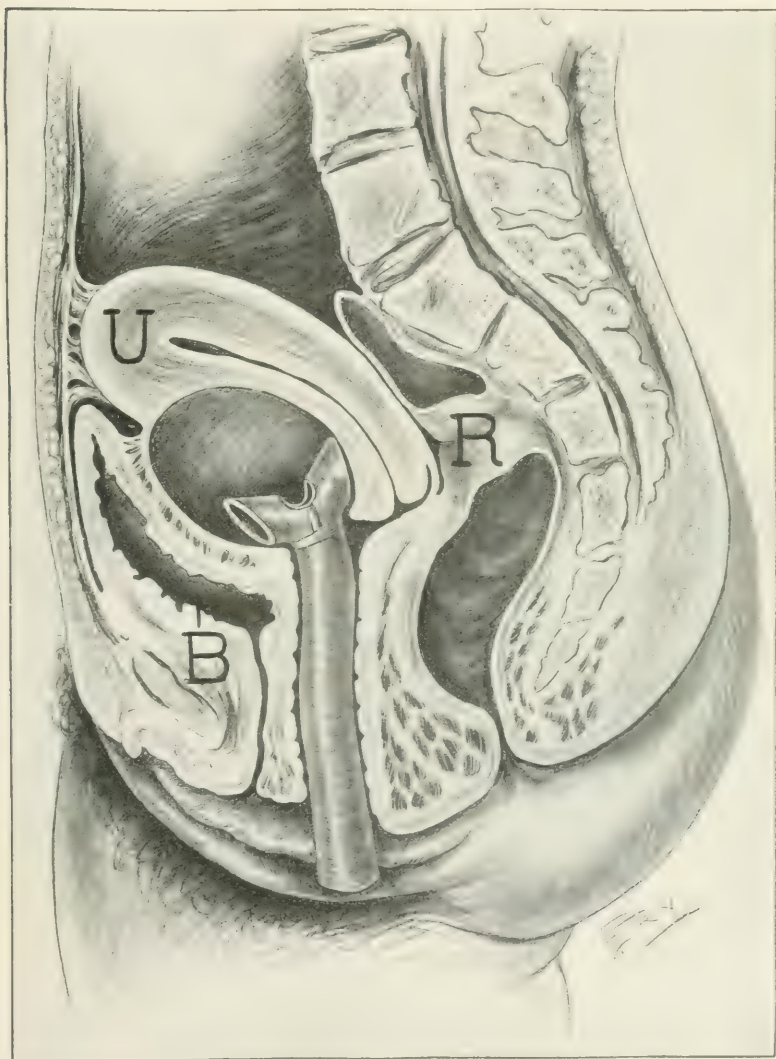


FIG. 7.—CASE IV. Abscess in anterior uterine wall. Dissecting between bladder and uterus. Anterior colpotomy. Drainage. Per vaginam.

Physical examination shows tenderness over the entire right half of the abdomen more especially in the right iliac fossa where an indurated mass can be felt filling up that quadrant of the

pelvis. Vaginal examination reveals an enlarged tender uterus drawn over toward the right side. Blood count, W. B. C. 22,000, polymorphonuclear cells 91 per cent. Urine showed evidences of an acute nephritis. Cervical and vaginal smears negative for gonococci.

Temperature on admission 103°, pulse 112. On October 25, 1910, the day of the operation, the temperature was 100.4° F. and pulse 100. At this time the abdominal mass had become more defined locally and vaginal examination revealed a soft bulging fluctuating tumor in the right vaginal fornix. On opening the posterior culdesac a small amount of clear serum was discharged and a fluctuating tumor in the right anterior wall of the uterus could be made out. This was incised freely, thoroughly irrigated, and drainage established per vagina by means of a large rubber tube and gauze packing.

The patient made an uninterrupted recovery and in four weeks was discharged well. Physical examination at the time of discharge showed that the uterus had returned to its normal size and was freely movable. The adnexa were normal and the urine contained no evidences of nephritis which existed at the time of operation (Fig. 7).

CASE V.—Intramural abscess of uterus (streptococcus) the result of puerperal infection, incision, drainage, treatment by autogenous streptococcus vaccines, recovery.

Mrs. A. K., forty-two years old, was referred to me on March 10, by Dr. Samuel Millbank, and on that date was admitted to Bellevue Hospital with the following history: During a married life of seventeen years the patient had been delivered normally of ten children until the last confinement which occurred fifteen days before her admission at which time she was attended by a midwife. Prior to her last confinement she has had no complications of labor, getting up on the tenth day, well.

Fifteen days before her admission she was delivered by a midwife of a full-term child. Her convalescence seemed normal until the third day postpartum, when the patient passed several large foul-smelling clots. She felt chilly and was markedly feverish following the chilly sensation. On the fifth day she was cured by a physician, and the symptoms from which she had suffered disappeared. On admission she complains only of a feeling of nervousness and mental unrest. Physical examination is negative except for tenderness and muscular spasm over the iliac regions, more markedly on the left side. Vaginal examination shows old, deep lacerations of the perineum and extensive recent lacerations in the same regions. There is a mass in the left fornix, firm and tender. The uterus is enlarged, soft and tender, especially in the left anterior portion, its mobility being limited. The left tuboovarian region shows a distinct tender mass, some tenderness in right vaginal fornix. Vaginal and cervical smears negative for gonococci. March 20, leukocytes 21,500;

polymorphonuclear cells 87 per cent. April 11, leukocytes 16,000; polymorphonuclear cells 84 per cent.

On admission the temperature was 97.4° F., pulse 84, respira-

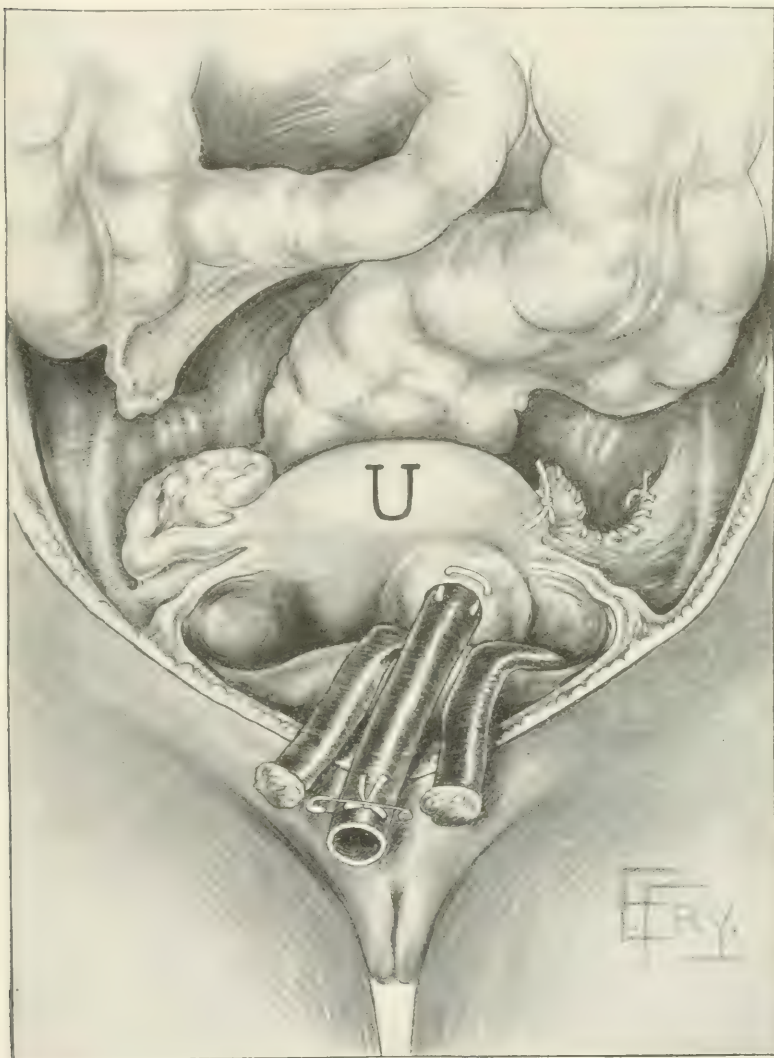


FIG. 8.—CASE V. Drainage of abscess cavity by rubber tube; neighboring peritoneal are by cigarette drains. Left tube and ovary removed.

tion 20. The same afternoon the temperature rose to 100.8° F., and on the day of the operation, March 23, the thermometer registered 104° F., with a pulse of 102 and respiration 26.

Operation.—Median incision, omentum found widely adherent

about the left tube, ovary and uterus; is divided between ligatures and intestinal adhesions are broken up. Left broad ligament, tube and ovary are the site of severe inflammation with several small foci of pus in the broad ligament. Major part of broad ligament with tube and ovary removed. Two foci of pus in the wall of the uterus incised and evacuated, cavity cauterized with pure carbolic acid and alcohol and drainage established by means of rubber tube and cigarette drains. An antistreptococcic vaccine prepared in the Cornell Medical College laboratory was administered each day, beginning the second day after operation with 15,000,000 units increasing the dose 5,000,000 every other day until the tenth day after operation when 40,000,000 units were given. On April 11, eighteen days after operation, under nitrous oxide anesthesia a small mural abscess was evacuated. The patient made a satisfactory recovery and was discharged well forty-nine days after operation (Figs. 8 and 9).

CASE VI.—*Abscess of the uterus, puerperal (streptococcus). Treatment by incision and drainage, autogenous and antistreptococcic vaccine, recovery.*

A. O., married, twenty-eight years of age and the mother of three children, was admitted to Bellevue Hospital on March 17, 1910, with the following history: Her family and previous histories have no bearing on the case. She has been delivered of three children with normal labor.

The patient was delivered of a full-term child by a physician two months prior to her admission to the hospital. She had no immediate complications, but three or four days after her delivery she began to have sensations followed by fever with pain in the left lower quadrant of the abdomen. These symptoms increased to such an extent that on February 9 she came to Bellevue Hospital. At this time she presented the signs and symptoms of a pelvic peritonitis of puerperal origin. She was put to bed and under treatment she improved rapidly, and on February 27, 1910, she left the hospital much improved, but not well. At this time her blood count showed 9,500 leukocytes with 74 per cent. of the polymorphonuclear cells. Her urine was normal, and vaginal and cervical smears were negative for gonococci. On March 17, 1910, she was readmitted to the Hospital complaining of pain in her back of a severe dull, aching character radiating to both sides of the lower abdomen. At this time vaginal examination revealed a soft, tender uterus about four times its normal size, apparently not fixed in the pelvis. Her pulse rate was 100, temperature 100.4° F. and respiration 22.

On March 25 the abdomen was opened by a median incision. On the anterior surface of a uterus four times its normal size was found pointing in the median line, 1 inch below the fundus an abscess from which 2 1/2 ounces of thick yellow pus was evacuated by incision. The cavity was cauterized with pure carbolic acid and alcohol, and suprapubic transperitoneal drainage established by means of the large rubber tube and cigarette

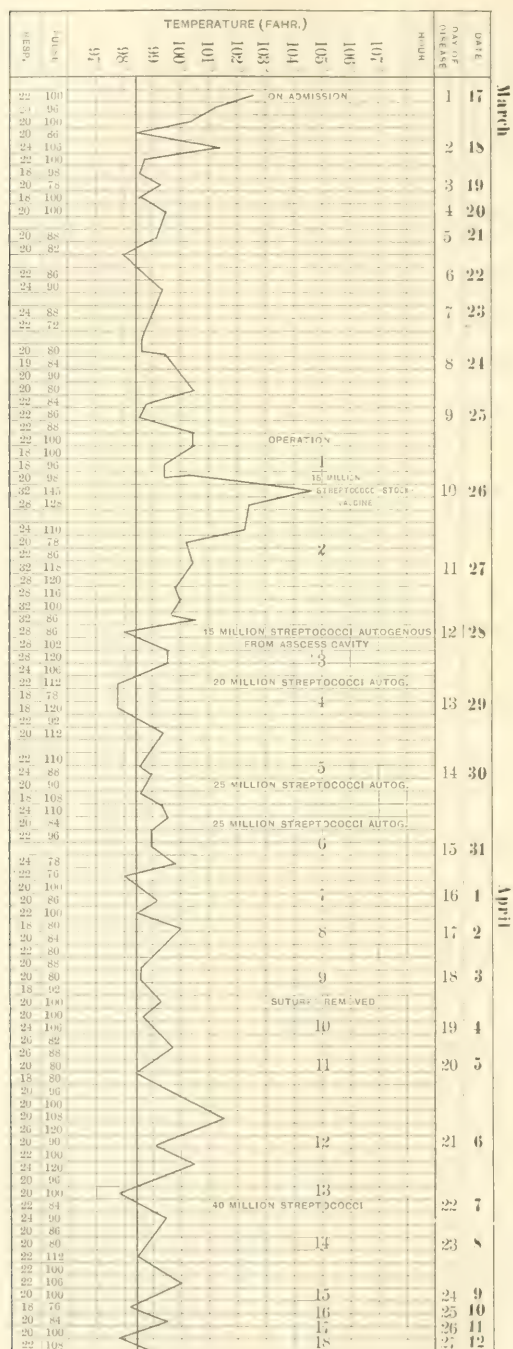


FIG. 10. CASE VI. CHART OF A. O.

drains. On March 26, the day following the operation, the patient's temperature had risen to 104.6° F., pulse 145 and respiration 32. At this time 15,000,000 units of a stock antistreptococcus vaccine was given. Two days later, March 28, an autogenous antistreptococcus vaccine having been prepared for us from the abscess contents by the Cornell University Medical College laboratory, 15,000,000 units were administered. This was increased by 5,000,000 of units every second day until on April 7, 1910, 40,000,000 of units were given. After the first dose of the antistreptococcus vaccine the temperature fell rapidly within twelve hours from 104.6° F. to 100° F., and following the second dose to normal, in the neighborhood of which point it remained until April 29, when the patient was discharged cured (Fig. 10).

CASE VII.—*Intramural uterine abscess (gonococcus). Treatment by incision, drainage, antigonococcic vaccine, recovery.*

A. S., a German woman of a low order of mentality, about twenty years of age and nulliparous, was admitted to Bellevue Hospital on June 8, 1910 complaining of a swelling of the external genitals. Owing to the patient's inability to speak English and her apparent mental dullness, no satisfactory history could be obtained. Vaginal examination reveals a profuse yellow, purulent discharge with marked edema of the vulva. The vaginal mucous membrane is inflamed. The vagina is shallow and its walls are relaxed. The uterus is enlarged to four or five times its normal size, and is painfully sensitive to pressure. There is a tender mass in the right lateral fornix. Vaginal and cervical smears positive for gonococci.

On June 15, 1910 the abdomen was opened by median incision and a large abscess in the right lateral wall of the uterus below the junction with the tube, incised and drained. The right tube and ovary were removed and the abscess cavity cauterized with pure carbolic acid and alcohol. The cavity was of such size that its walls were partly approximated with catgut sutures and suprapubic drainage was established by means of rubber tube and cigarette drains. The pus within the abscess cavity contained gonococci but was sterile. The patient was therefore put on a stock antigonococcic vaccine, which was administered in the usual manner under the supervision of the bacteriologists from the Cornell University Medical College laboratory. The vaginal conditions were treated by applications of silver nitrate and douches and tampons medicated with formaldehyde. On August 4, 1910 the patient was discharged well.

These seven cases which comprise my experience with acute suppurative metritis offer some conditions worthy of consideration. Six of these cases came under my care in Bellevue Hospital and the seventh in my service at the Har Moriah Hospital. Six of the cases were the result of septic infection (streptococcus) following child-birth, and the seventh the result of gonorrheal

infection. In this connection it is interesting to note that Von Franque found that 50 per cent. of his cases were the results of puerperal infection, while in my experience six out of seven cases were the result of this form of infection. All of Sampson's cases were puerperal streptococcic infection. All of my cases were treated by free incision and drainage, and in addition to the drainage of the abscess itself, drainage of the peritoneal cavity. In three cases vaccines were employed. In the gonorrheal case a stock vaccine was used, since the pus in this case was sterile, and in the two streptococcus puerperal cases thus treated an autogenous vaccine was administered as has been described. All of the cases recovered and are reported to me at the present time as well. The course of the cases following operation seemed to differ very little, whether vaccines were employed or not. A comparison of the temperature charts of the two classes of cases as shown here will be of interest in the consideration of the treatment by simple drainage, or by drainage supplemented by the use of vaccines.

I think it is but fair to say, however, that the two puerperal cases in which the vaccines were used to supplement drainage presented far more serious clinical pictures than the cases in which drainage alone was employed. Indeed, in the case of A. R., referred to me by Dr. Samuel Millbank, I am free to say that a recovery was not expected either by myself or my house staff. In every case but one there was one large abscess cavity, and in that case there were two pockets of pus in such close proximity that they were easily converted into a single cavity. The appendages were involved in two cases and the removal of tubes or ovaries or both on one side was necessary in two cases. In all cases but one the abscess cavity occupied a position near the fundus, and in a majority of the cases in the anterior portion of the uterus.

The uterus was much enlarged in all of the cases and the effort of the pus, except in one case, was to make its escape upward rather than toward the vagina. In this single exception, Case IV, drainage was satisfactorily established per vaginam. In all of the cases there were extensive adhesions especially omental. In all of the puerperal cases the streptococci were alive and active, but in the abscess dependent upon the gonorrheal infection the pus was sterile.

From experience in these seven cases supplemented by my study of the meager literature of the subject, as it stands to-day,

I have drawn some conclusions which I offer you in closing this purely clinical paper.

As we have seen there have been but few reports of cases of abscess within the uterine wall, but from my own experience and that of Von Franque, Noble and Sampson I am convinced that many of these cases are overlooked, and in this connection it seems well to consider the possible manner of termination of these collections of pus if not operated upon in a comparatively early stage. I am satisfied that many collections of pus within the uterine wall are discharged into the uterine cavity resulting in a recovery of the patient without an accurate knowledge on the part of the medical attendant of the presence of the abscess. Sudden gushes of pus from the uterine cavity followed by a relief of symptoms have been not uncommonly attributed to the discharge into the uterus of the contents of a pyosalpinx. From my study of many hundreds of cases of pus tubes I feel sure that they practically never discharge in this way, and what has been regarded as pus from a tube has been pus from an abscess in the uterine wall. And again pus lying in a shallow pocket beneath the lining membrane of the uterus may be easily liberated by the curet which has been brought into use because of symptoms pointing to some serious inflammation of the endometrium. And again the pus in its effort to escape may make its way between the layers of the broad ligament and following the direction of the round ligament present itself in the neighborhood of the inguinal ring under the guise of a phlegmon of the broad ligament which, being opened and drained extraperitoneally, results in a cure of the patient under a false diagnosis. Abscesses in the posterior wall of the uterus and low down or even in the anterior wall may be opened and drained under the name of pelvic abscesses, a mistake in diagnosis which might easily have been made in Case IV.

These abscesses may possibly rupture into the peritoneal cavity, resulting in death or a general or local peritonitis, or into the intestinal canal or into the bladder or the vagina.

I think we must accept the fact that it is possible for the pus to become sterile, as illustrated in Case VII and to actually become absorbed. These methods of termination have been well brought out by Sampson in his admirable report already referred to, but one possible termination has not been referred to by him. The collection of pus within the uterine wall may become sterile and may then become the site of a calcareous deposit. This is well illustrated by a case which was sent to me by

a physician several years ago with the diagnosis of a fibroid tumor in the anterior wall of the uterus with the hope that I might be able to remove the tumor by means of a myomectomy. The patient presented the classical symptoms of uterine fibroids, and a tumor the size of a small mandarin orange could be felt in the anterior wall of the uterus. The patient gave a history of instrumental delivery five years prior to coming into my hands followed by a long period of fever, pelvic pain and tenderness with confinement to bed for a period of six or eight weeks after her delivery. On opening the abdomen I found in the anterior wall of the uterus a calcareous tumor round and symmetrical and resembling closely

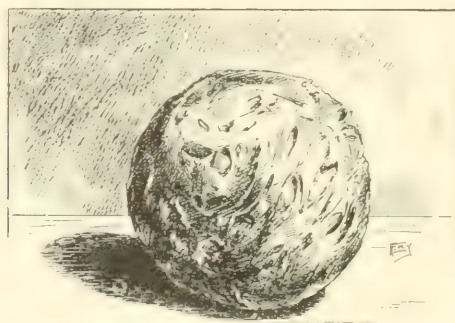


FIG. 11.—Calcareous deposit in old uterine abscess.

an ordinary golf ball. I presented the specimen at a meeting of the New York Obstetrical Society as a calcareous degeneration of a uterine fibroid, but in the discussion it was quite well established that it was in all probability a calcareous deposit in an old abscess in the uterine wall. The possible manner of termination of an abscess in the uterine wall has, so far as I can learn, never before been established.

The channel of entrance of the infecting gonococcus or streptococcus is a question of much interest. I am quite sure that in a large proportion of these cases the infecting bacillus finds this possibility through some traumatism. A review of the six cases dependent on puerperal infection will show that at least three of them had been subjected to some kind of operative procedure, and this may serve to explain in a measure the presence of the infection in the anterior portion of the uterus. In the heavy puerperal uterus which naturally drops backward clumsy operative procedures are apt to result in injuries to the anterior wall,

thus offering in this site an opportunity for entrance of the infecting bacillus.

Time of operation is a matter of no small importance in these cases. I have always contended that it was unwise to operate on any inflammatory condition within the peritoneal cavity dependent upon gonorrheal infection while there was present in the vagina or cervical canal, or any part of the external genitalia an actual gonorrheal infection. Therefore the plan adopted in the treatment of the case reported as dependent upon such an infection consisted in vigorous local treatment of the gonorrhea until no evidences of gonococci were discoverable in the smears from the cervix or vagina.

It is, I believe, quite a well established opinion that it is not wise to operate on patients the subject of streptococcic infection during the acute puerperal condition. A study of the six puerperal cases which I have presented to you in this paper will show that no case was subjected to operative measures until it had been under observation and treatment for a time extending over a period of from one to two or even three weeks. The question of operation itself is the last thing which I shall consider in this paper. We have to deal with a definite clinical entity, an abscess—an accumulation of pus within the uterine wall. This pus must be evacuated and its cavity drained if we seek to save for future usefulness the organ in which the accumulation exists. Noble showed in his paper, referred to before, that a mortality of 25 per cent. resulted in those cases which were subjected to hysterectomy, while the eleven cases of incision and drainage reported by him all recovered. Sampson lost one case out of four, but this case should not be charged against him because it reached him in such a deplorable condition that small hope could be had for a recovery from the first.

My seven cases have all recovered. How much the exhibition of the autogenous or stock vaccines may have had to do with the recovery in the three cases in which they were used I leave to you to determine.

In concluding this personal clinical report I will ask you to consider with me the method of operative procedure itself. When we have to deal with such active and vigorous forms of infection as those dependent upon the presence of the streptococcus and the gonococcus we naturally hesitate about establishing drainage where we are not sure that it will be shut off from the possibility of a general systemic infection, and this we can easily

see was what prompted Sampson in his cases to attempt to establish extraperitoneal drainage. In all of the cases where an abscess develops within the uterine wall the body of the uterus is considerably enlarged, and in my cases, as you have seen, the abscesses as a rule were located near the fundus and usually in the anterior aspect of that part of the uterine body. This would lead us to adopt some method of drainage which would give us the shortest safe cut to reach the anterior wall, and this in all my cases but one was transperitoneally to the lower angle of the median incision just above the pubes. The single case not treated in this manner was Case IV, which was drained through the vagina, the abscess being low down in the anterior wall of the uterus and, presenting between this organ and the bladder in the vaginal vault, could in this case be easily reached and drained from below.

In addition to the high position of the fundus of the uterus the result of its enlargement and the location of the purulent accumulations in the anterior uterine wall or near the cornu, we will see in all of these cases that nature by means of omental and intestinal adhesions has made every possible effort to protect the general peritoneal cavity from the invasion of the infecting pus. There are several lessons to be learned from this defensive campaign of nature. In the first place to select the shortest possible course for the evacuation of the pus; in the second place to feel fairly safe in selecting a transperitoneal route, if this be the short one, since nature has already established an admirable line of defense against infection of the general peritoneal cavity; in the third place to sacrifice the part of the omentum in the immediate vicinity of the abscess, since that itself may be infected, by ligature and division, before its adhesions are broken up. In the fourth place to respect as far as possible the adhesions which nature has temporarily established between the intestines and surrounding structures. This for two reasons; first, because to break up these adhesions may injure the intestines in their softened condition, and this general softening and friability of all the structures is in marked evidence in these cases, or may open up areas of raw surfaces which may result in permanent crippling adhesions. When the source of irritation, the pus, is removed, these temporary protective adhesions of nature melt away as does the temporary callus which serves as a protection to the broken bone until its ends have been united.

In establishing such drainage two essential things must be

considered: First, drainage of the abscess cavity, and second, drainage of the surrounding peritoneal surfaces. In drainage of the pus cavity it has been my custom to employ a large rubber

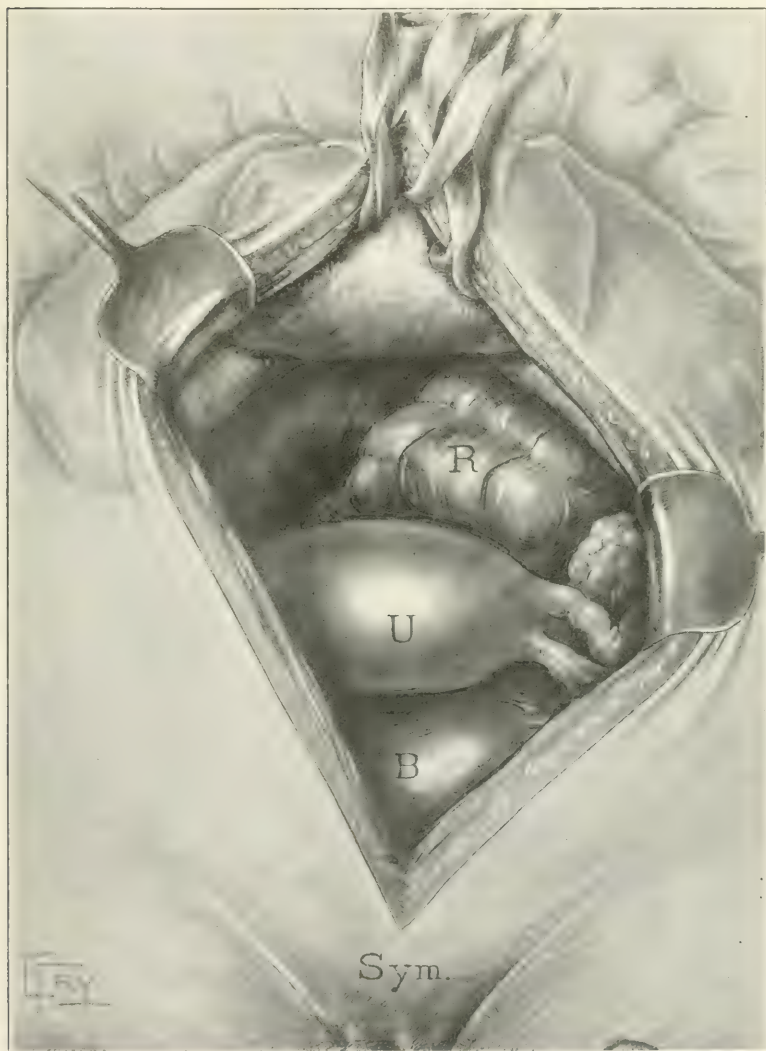


FIG. 12.—Three bolsters in position, holding back the intestines from the field of operation.

tube, from $1\frac{1}{2}$ to $3\frac{1}{4}$ inch in diameter. This tube is carried well into the abscess cavity and held in position by a ligature

passed through the abscess wall and the rubber tube in two places as shown in the illustrations.

I have attempted to illustrate that by the tube which I show you. The object of the large stiff tube is to give vent to any pus or detritus which the abscess cavity may have to throw off. The object of fixing it in the abscess cavity is to insure its maintenance there as the uterus descends in the pelvis after its comparative rapid diminution in size following the evacuation of the pus. The holes in the tube through which the ligature is carried should be punched of sufficient size to permit the free running of the suture when it is cut for the purpose of removing the tube. The cigarette drains are simply to serve as drainage for the surrounding peritoneal surfaces, and usually removed by the fourth or fifth day. They are best made by drawing strips of gauze through soft-rubber tubes. Such drains are much more satisfactory than those made of the ordinary gutta-percha tissue which is friable and easily unrolled from its contained gauze.

Before attempting to free and incise the abscess and establish drainage the field of operation should be carefully isolated by means of bolsters and gauze pads. My artist has attempted to show in Fig. 12 the bolsters in position. These bolsters I regard as great time savers in abdominal work, and I believe I may safely say that time savers within the peritoneal cavity are life savers, for there is no field of operation where celerity and certainty count for so much as they do in intraperitoneal surgery.

In concluding this paper I can do no better than quote the final paragraph of the admirable report of Sampson to which I have already referred. "Its occurrence (*i.e.*, intramural abscess) as a distinct clinical entity has already been observed a sufficient number of times to warrent a more general recognition of it as such, and it deserves greater attention in obstetrical and gynecological literature than has been accorded it in the past."

PUERPERAL INFECTION, CLINICAL VARIETIES AND TREATMENT.¹

BY

JAMES A. HARRAR, M. D.,

Attending Surgeon to the Lying-in Hospital of New York.

(With six charts.)

OPPORTUNITY has been afforded the writer in his hospital practice for clinical observation of a series of severely infected puerperal women, and in many instances when on duty to direct their treatment. In the past six years on the Third Indoor Division of the New York Lying-in Hospital there have been 825 cases of morbidity of genital origin, the index of morbidity recognized by the hospital being any rise to 100.4° or over during the lying-in period. This is excluding temperatures due to definite breast or lung conditions or to extragenital infections. In two ways the morbidity may be described as legitimately larger than that of the ordinary maternity service, first by the admission of cases in labor that have already undergone attempts at delivery, and secondly by the admission of infected post partum women. The "septic" side of the service has thus become of value in presenting a wealth of material for study.

It has come to be recognized that early diagnosis of the cause of fever in the recent mother is difficult, and that many procedures widely employed in the treatment of puerperal infection are dangerous and of indefinite value. It is to aid in the appreciation of the variety and the extent of the infection present, as well as to discriminate in the method of treatment to be employed that this paper has been undertaken.

The only way in which we can make any progress with this complicated but all too common problem is to continue in our collaboration with the bacteriologist. We feel that great assistance has been given in the management of puerperal infection by the hospital laboratory in the details of culture and spread slide reports. It is true that the isolation of the offending bacterium is often of little apparent value. "Streptococci in uterus" cases get well and "sterile culture" cases die. Investigators argue that we are not justified in classing a case as streptococcic toxemia just because a few non-virulent streptococci are found on cervical smear

¹ Presented at the Twenty-third Annual Meeting of the American Association of Obstetricians and Gynecologists, held at Syracuse, September, 20-22, 1910.

or uterine culture. The quality and quantity of the particular woman's resistance, however, must be taken into account as well as the acquired virulence of the same non-virulent bacteria as they penetrate into wounded and devitalized tissues. When the attending physician knows what organism is at work he always

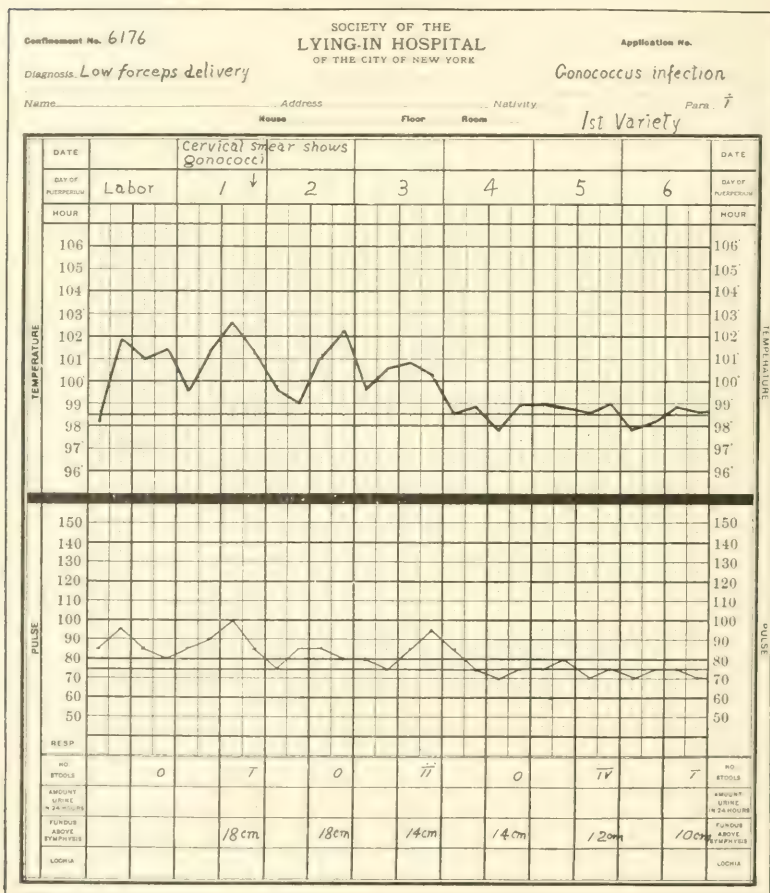


CHART I.—Temperature curve of gonorrheal infection of the early variety.
Clearing up without sequelæ in the first week of the puerperium.

feels in better command of the situation. It helps him to judge when to be radical and when to be conservative in his attack if he is acquainted with the identity of the enemy. Certainly with our present knowledge of the subject the most exact index of the variety of the infection is the result of cervical and uterine smear

and culture. On the other hand, the clinical picture of pulse, temperature and general condition is the correct index of the balance between the virulence of the particular strain of that organism and the resistance of the patient.

There were 225 women in which either the streptococcus, the gonococcus, the staphylococcus or the colon bacillus were found, and the discussion will be confined chiefly to these and to a number of cases with distinct pathological lesions but in which no organism was isolated. It might be well in passing to mention fifty-two instances of reaction temperature occurring in labor or immediately thereafter and falling to normal within the first twenty-four hours with no further rise during their stay in the wards. The higher rises to 103 and 104° were usually associated with foul and yellow lochia and were a true transient toxemia. The milder reactions occurring in severe labor or after operative procedures may be viewed as the temperatures of exhaustion or of the absorption of fibrin ferment. There were, however, seventy-one additional patients with an apparent reaction rise which as the case progressed either continued high or after the initial fall reappeared. So that it must be born in mind that a temperature beginning in labor or appearing within the first twelve hours cannot always be looked upon with equanimity as a reaction rise. It may be the first signal of a severe infection.

True bacterial toxemia including sapremia and without definite pathological lesions aside from birth injuries of the genital canal, occurred 317 times in the series. In 137 of these toxemias cultures of pathogenic bacteria were secured. In the remainder which were largely sapremic, either the cultures were negative for pathogenic bacteria or else no cultures were made.

Sapremias	180
Streptococcic toxemias	37
Staphylococcic toxemias	38
Mixed	18
Gonococcic toxemias	31
Colon bacillus toxemias	12
Staphyl. and colon	1
Total toxemias	317

Probably the most interesting group of toxemias were those in which the gonococcus was found in the vagina or cervix.¹ There

¹ The cases cited do not include any of those reported from the wards of this hospital by Stone and Macdonald in 1905.

has been considerable discussion as to whether the gonococcus is such a frequent inhabitant of the genital canal of pregnant women as general statistics of the disease would indicate, also when present whether it is really of much importance as a patho-

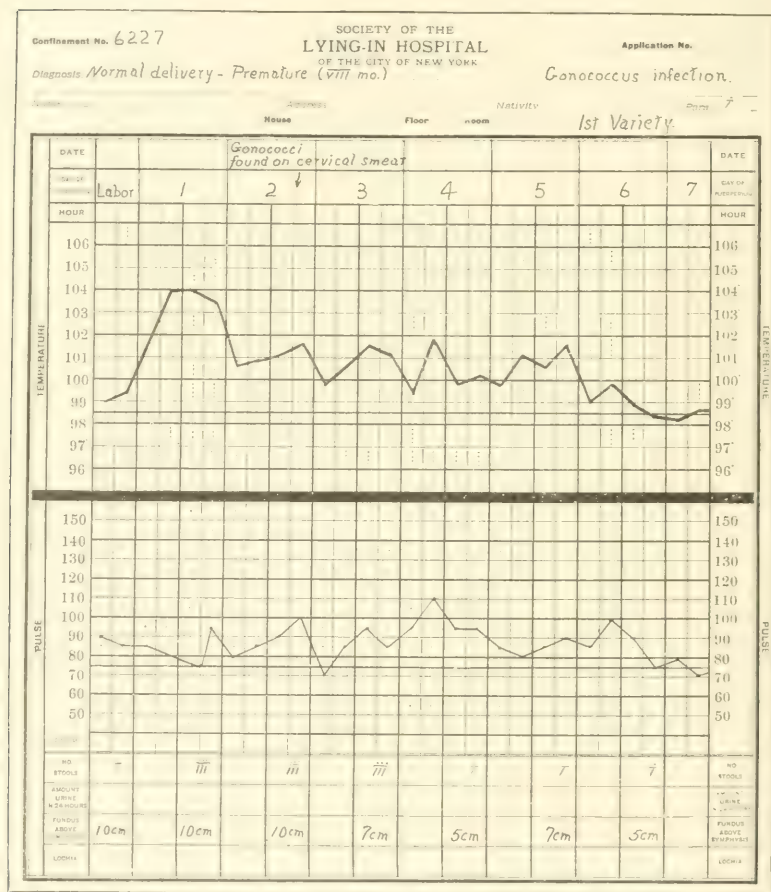


CHART II.—Temperature curve of gonorrheal infection of the early variety. Clearing up without sequelæ by the end of the first week of the puerperium.

logical factor in the puerperium. Our experience is not conclusive on either point, but such figures as it is possible to present are suggestive.

Several years ago we took smear spreads from the cervix and vagina of every parturient on admission. The gonococcus was found approximately in 6 per cent. of all pregnant women. This

is in close agreement with Williams's figures of 5 1/2 per cent. The experience of foreign observers seems to be much larger, (Leopold 20 per cent., Kronig 28 per cent.). At the time of this investigation about 40 per cent. of the women infected with gonorrhea exhibited a febrile course during their puerperium. In the six years we have had thirty-nine cases of fever in the puerperium with a gonorrheal infection. While it is scarcely possible to individualize this infection as a clinical type, it is quite noticeable that there are two varieties of the gonorrheal invasion to be clinically distinguished from each other. The first variety is the more common. The temperature rises during labor or on the first day and runs a course of six or seven days duration, approaching normal in the A. M. and reaching 101° to 103 or 104° in the P. M. The lochia is foul, of a musty, fetid odor; the pulse ranges a little lower than in streptococcic or colon bacillus infection, and there is the general picture of a bacterial toxemia. Further trouble may be expected in 12 per cent. of such cases, usually in the form of pelvic abscesses with associated streptococcus infection and requiring posterior vaginal section and drainage. Rarely there may be an immediate tubal involvement following this type, but such extension is usually later and five of these women have had salpingectomies performed within eight months after their confinement.

The gonococcus may be found on cervical spread slides from the second to the fifth day. We found it most frequently as early as the third day. A pure infection of the gonococcus exhibiting this early clinical type will often resolve as a simple toxemia and leave the woman in good physical condition.

The second variety of the gonorrheal infection, not so common as the first, shows no rise in temperature or other disturbances during labor or for the first five or six days, and the woman seems to be running a normal course. At the end of the first week, however, from the fifth to the seventh day, the temperature suddenly shoots to 102° or more and there is severe pain and tenderness across the lower abdomen. It is this class that includes the greater number of adnexal complications. The gonococcus seems to have penetrated deeper before conception occurred and lying quiescent attains new vigor during the puerperal involution.

In 28 per cent. of such cases the infection is not limited to the uterus. Even more remote lesions may occur such as arthritis. One of our cases developed a typical gonorrheal arthritis of one elbow and the opposite wrist, delaying the convalescence for

many weeks though finally subsiding without operative interference.

The most conservative treatment has proved to be the best when the gonococcus is present. Intrauterine douches are bad and a curettage of any variety is most dangerous. In several

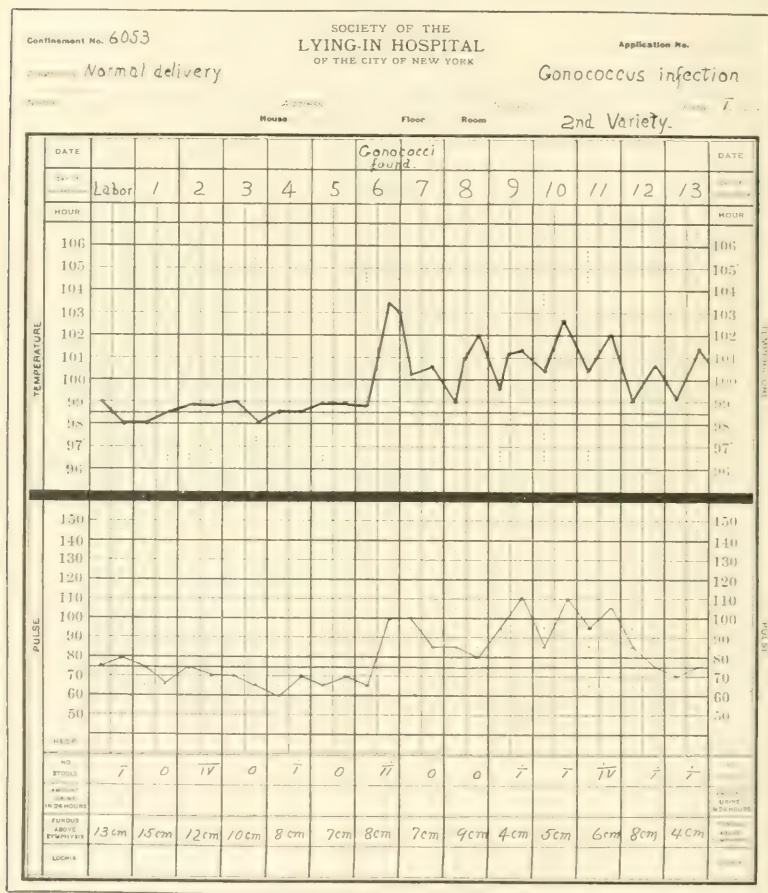


CHART III.—Puerperal gonorrheal infection of the second variety, symptoms not appearing until late in first week. Gonorrheal tubes were removed from this case eight months later.

cases there was a most suspicious connection between an intra-uterine douche and a spread of the infection to the tubes a day or two later. The advisability of even vaginal irrigating with permanganate solution is questionable. The time for such treatment was before parturition. Cartharsis, elevation of the head

of the bed and the ice-bag when pain or tenderness is present is the more appropriate management of gonorrheal toxemia.

There were also several cases admitted post partum suffering with gonorrheal infection that may be mentioned here to complete the group. One of these died with a complicating septic pneumonia having had a mixed genital infection of gonococci and staphylococci. This was the only death in this group. One had multiple abscesses of the uterus and recovered after a complete hysterectomy, the abscesses showing streptococci on culture. Two had posterior vaginal sections done for pelvic abscess. Our experience with the gonococcus thus agrees with those who maintain that this infection is often a serious one in the puerperium. Though a fatal issue is not common, the damage done is more permanent than that of the other infections and there is likely to be further trouble at a later date. The majority of puerpera who on their discharge examination showed thickening or tenderness in the vaginal fornices were those in which the gonococcus had been the destructive agent.

The common clinical picture produced by the colon bacillus is a severe toxemia beginning on the second to fifth day with a sharp rise of temperature, considerable prostration, and frequently with one or more chills. It is not especially distinguishable from the other toxemias except by the extreme foulness of the lochia, the odor being like that of colon bacillus pus from a bad appendiceal abscess. It is in this variety of infection that the intrauterine douche gently given has proven of greatest value. Twelve cases of colon bacillus toxemia were treated with intrauterine douches and responded well to one or more irrigations with normal saline solution. The change in the general condition within twenty-four hours after the administration of such a douche was most convincing of the effectiveness of local treatment in this infection.

In the toxemia produced by the streptococcus the treatment with intrauterine douching or manual cleansing of the uterus has not met with success. In thirty-seven cases of pure streptococcic toxemia not one responded favorably to such local procedures. The cases of streptococcic toxemia that cleared up rapidly did so without any local treatment whatsoever, and in reviewing the other pathological conditions such as streptococcic pelvic exudate, peritonitis and bacteremia, the record of intrauterine douching or curettage is usually found antedating the later serious developments. In streptococcic toxemia without complications there is usually no chill, the rise in temperature begins before the

fifth day, the pulse rise is high in proportion and the lochia is not foul unless there is an accompanying mixed infection or retention of sapremic secundines. The general treatment of toxemia without local specialization is the one to follow, *i.e.*, institute drainage by elevating the head of the bed and apply the ice-bag

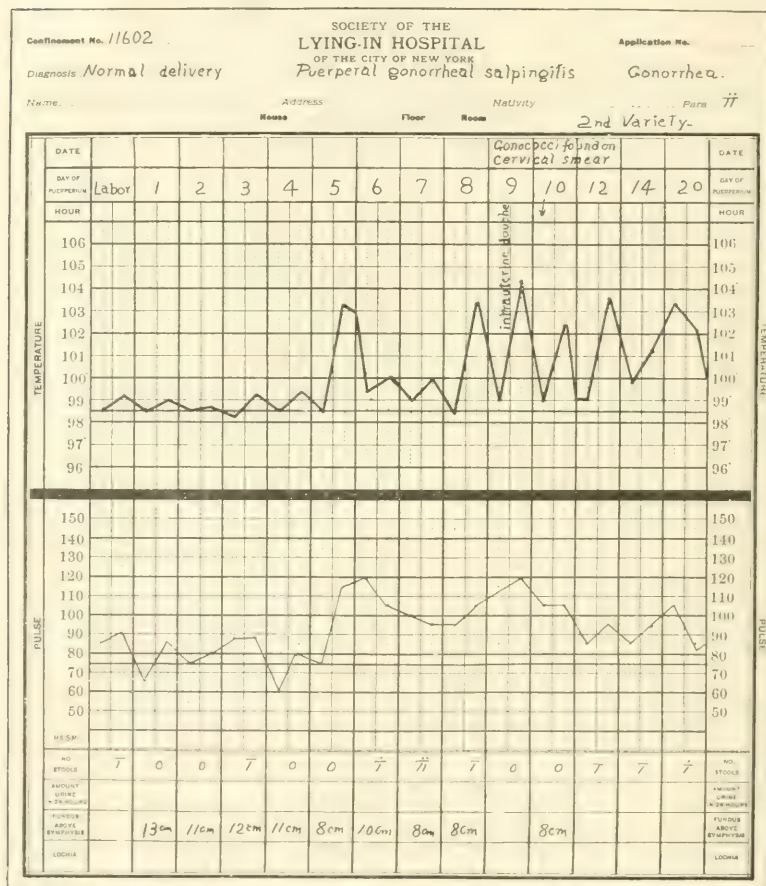


CHART IV.—Gonorrheal infection of the second variety. An intrauterine douche on the ninth day, before the identification of the infection, was apparently followed by extension to the tubes.

to the lower abdomen for the toning of the uterus and the relief of pain.

Staphylococcic toxemia without complicating lesions is rare and when present is mild in character. The let alone treatment is here again all that is necessary. The staphylococcus is more

frequently found in combination with the streptococcus in producing a toxemia which is of a more severe type.

There were 180 cases which may be classed as sapremias. These all had foul lochia, and include those in which either no cultures were made owing to the mild degree of the infection or

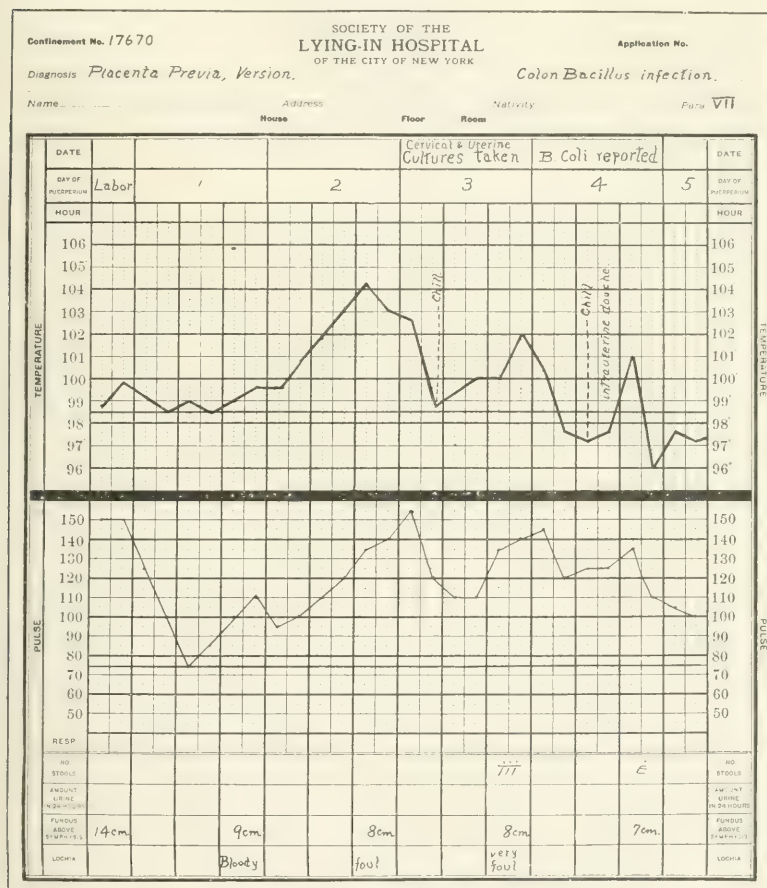


CHART V.—Showing the excellent results of the intrauterine douche in colon bacillus infection of the uterus.

where the culture was reported negative for pathogenic organisms. Many times there was evidence of retention of secundines, and improvement seemed more rapid in the cases in which a manual cleansing of the uterus was done. Aside from hemorrhage the indication for entering the uterus for the removal of foul retained lochia or secundines must be the patient's general condi-

tion. Providing no organisms are found on smear or culture, if the temperature is high with or without chills, and the prostration is marked, it is proper to remove manually or with the intra-uterine douche the contents of the uterus.

Such intrauterine manipulation will be precluded in the case of single day rises by the necessity of waiting for the twenty-four report from the bacteriological laboratory.

In making a diagnosis of pelvic exudate we will include two distinct pathological conditions. The first is strictly extraperitoneal and begins as a cellulitis between the layers of the broad ligaments.

It may extend anteriorly or posteriorly forming retroperitoneal infiltration. Pelvic cellulitis may thus become very massive without breaking down into pus formation. When extraperitoneal abscesses have formed either between the layers of the broad ligament or retroperitoneally, even sometimes within the sheath of the psoas muscle, we have usually opened them as soon as diagnosed. Fluctuation is rarely elicited, the pus being as a rule under considerable tension, and the diagnosis is made on the continued elevation of temperature and increasing pain and tenderness in the mass. The other form of pelvic exudate to be described is more likely to be found after abortion than term labor and is a true pelvic peritonitis. There is matting together of the pelvic organs together with loops of intestine and omentum with plastic lymph. When abscess occurs it is tubo-ovarian in character or in Douglas's culdesac, and though intraperitoneal is usually well walled off. Operation should be deferred unless the patient is growing worse or there is very distinct softened bulging in the posterior vaginal fornix.

Well marked pelvic exudate, many times filling up the entire pelvis, occurred fifty-seven times. Cultures and smears from the cervix, uterus or evacuated pus showed the following results:

No cultures secured in	13
Streptococci in	16
Staphylococci in	7
The above mixed in	9
Gonococci in	8
Colon bacilli in	4
Total	57

There seemed to be little difference in the course of resolution as far as the variety of the infecting organisms was concerned. It

was noticeable that the streptococcus was most frequently found in the typical broad ligament extraperitoneal abscess, and that the pelvic complications of the gonorrheal infection were always tubal and intraperitoneal in location.

The colon bacillus was an especially treacherous organism when

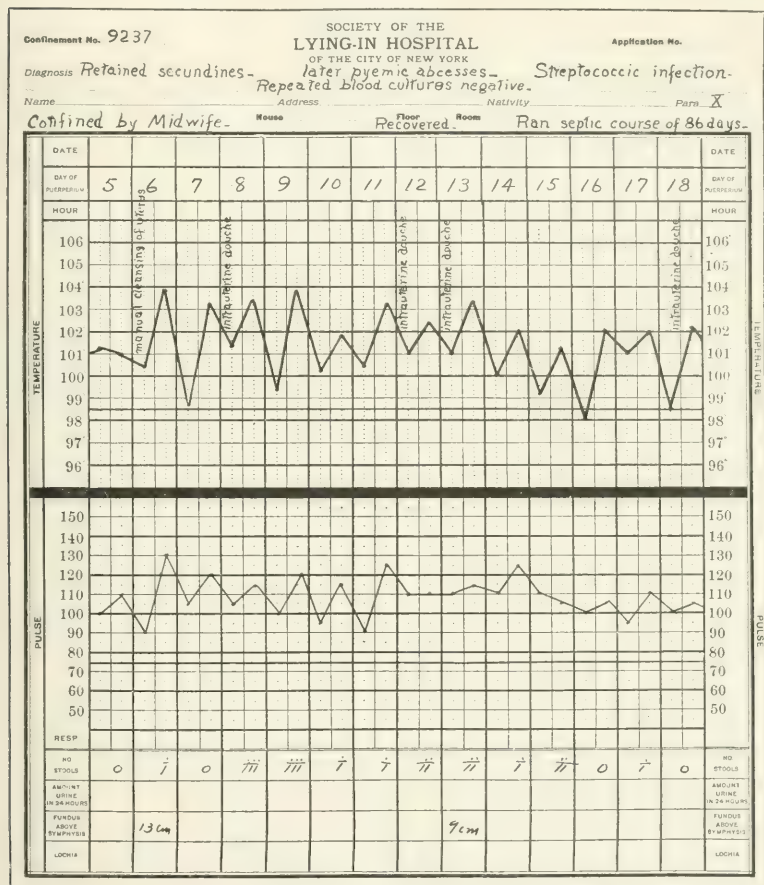


CHART VI.—Showing the uselessness of the intrauterine douche in a virulent streptococcus infection of the uterus, prolonging the course, and furthering the later pyemia by breaking down nature's barriers.

invading areas already infected with a different species of bacteria. Many of those late insidious types of retroperitoneal cellulitis are augmented and a fatal peritonitis superimposed by a penetration of this organism possibly through the adjacent intestinal walls. This was the course in two of the general peritonitis cases men-

tioned below, where a previous posterior vaginal section into a pelvic mass revealed nothing but a cellulitis. Cultures made at the time of operation from the exuding serum showed streptococci. The later laparotomy for a general peritonitis disclosed the superimposed infection of the colon bacillus in the abdominal fluid.

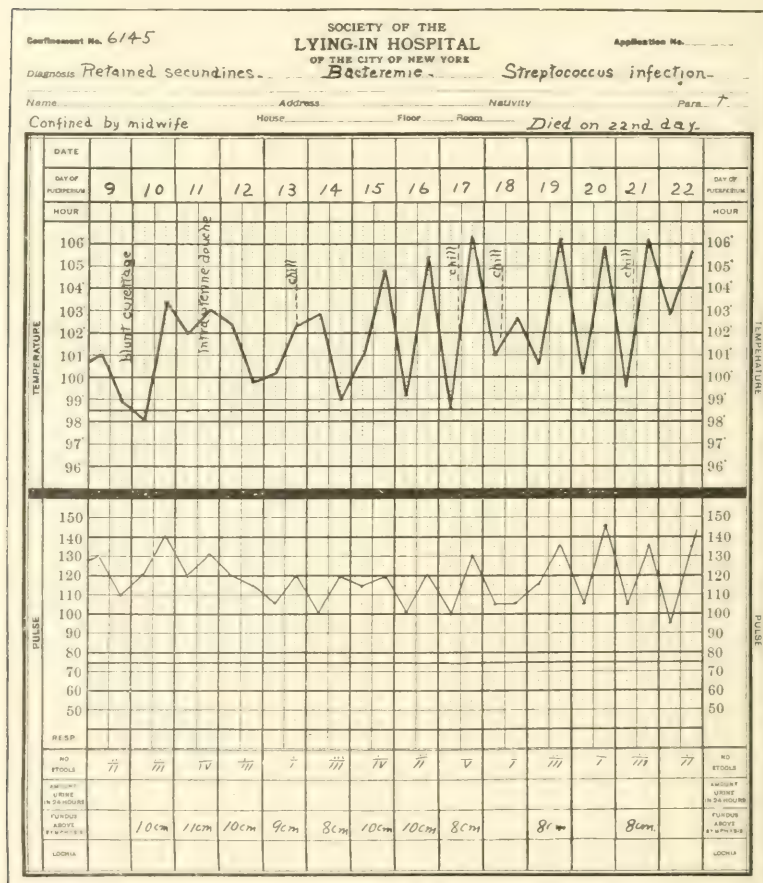


CHART VII.—Showing the bad results of the curettage and the intrauterine douche in streptococcus infection of the puerperal uterus.

Posterior vaginal section for the evacuation of pelvic pus formation was made twenty-one times. Exploratory laparotomy combined with posterior vaginal section or with incision over Poupart's ligament was done nine times. When the abscess is far out in the broad ligament its approach to the anterior abdominal

wall can be outlined by an exploratory abdominal incision. The original wound can then be closed and a second incision made into the abscess far out above Poupart's ligament where it has been determined that such incision would enter directly into the abscess cavity without opening the peritoneum. When the broad ligament abscess is found close to the uterus, however, it must be drained transperitoneally the same as in a high tubo-ovarian abscess. In all cases of pelvic exudate where pus is found and liberated the convalescence is hastened, but it is doubtful if any advantage is secured by incising cellulitic masses when no pus is present. Resolution is the rule even in the extensive cases, and is hastened by daily hot vaginal douches, the ice-bag externally, and prolonged rest in bed preferably in the open air and sunshine. The Lying-in Hospital with its well equipped solarium on the roof is admirably fitted for this outdoor treatment.

Femoral and saphenous phlebitis occurred fifteen times, usually beginning seven to twelve days postpartum. In two instances it started as an antepartum complication. In ten it was the only lesion present.

Pelvic thrombophlebitis was diagnosticated clinically many times. These are all included in the pelvic cellulitis group, except two in which the diagnosis was confirmed by laparotomy. The treatment with rest, elevation, protection and the ice-bag for the relief of pain has been invariably successful. It is important to avoid massage for reduction of the swelling until the temperature is flat and the tenderness in the leg has entirely disappeared. We have seen further extension of the process and prolongation of the convalescence for several weeks by rough massage that was instituted too early.

The results in general puerperal peritonitis have been most unsatisfactory. There were nineteen cases diagnosed either by very definite physical signs, by operation or at autopsy. Cultures made from the peritoneal pus showed the following results:

Streptococci in	4
Staphylococci in	2
Above mixed in	2
Colon bacillus in	2
Colon b. and strepto. in	1
No growth or no cultures	8
Total	19

Ten were subjected to laparotomy. In three a median incision was made with additional drainage incisions in the flanks, in five an abdominal incision combined with posterior vaginal section, and in two instances a hysterectomy was performed with general peritonitis following uterine rupture as the indication. Of the ten operated upon, nine died. The single recovery was a staphylococcus infection with many adhesions and pus pockets between the intestines. Eleven died in which no operation was made.

Their condition on admission seemed too desperate to warrant the attempt

Bacteremia was a frequent finding in these peritonitis cases, so that it is evident that we will not be successful in opening the abdomen for drainage in general puerperal peritonitis until we are able to combat the associated infection in the blood.

The mortality among our straight cases of bacteremia until recently has been almost as great as in general peritonitis. Bacteremia with fifty or more colonies per cubic centimeter of blood was present in twenty-eight instances. Twenty of these women had been confined by private physicians and midwives and were sent into the hospital severely septic. Many were moribund on admission. The varieties of bacteria found were:

Streptococci in	22
Staphylococci in	1
Above mixed in	2
Colon bacillus in.....	2
Colon b. and strepto. in	1
Total	28

That bacteria in the blood are more frequently suspected clinically than they are demonstrated by our present culture methods has been pointed out by Dr. J. E. Welch, the hospital bacteriologist. In 175 septic women in which blood cultures were requested by the attending physician positive findings were made in but forty-six. In the twenty-eight cases listed above the streptococcus was found twenty-two times in pure culture, once associated with the colon bacillus and twice with the staphylococcus. The staphylococcus occurred once in pure culture and the colon bacillus twice. The colon bacillus was only identified from post-mortem blood culture where the body had been kept over night on ice. It was found in the heart's blood and in the spinal fluid. Of the twenty-eight puerpera with bacteria free in the blood stream but three recovered. The first had an associated pyemia.

When pyemic abscesses develop in the course of a bacteremia recoveries are frequently noted. In the list reported by Welch the only recoveries had abscess formation somewhere in addition to the bacteria in the blood. The two recent cases that have recovered are both of great interest to us, and the treatment employed in each will be the subject of further investigation. These were both cases of straight streptococcemia and without other demonstrable lesion. One already reported by Welch, responded to the subcutaneous injection of large doses of normal human blood serum after an evident failure with the leukocytic extract serum of His. The other was given two intravenous injections of thirty grains of magnesium sulphate in solution. Her temperature then fell to normal for four days when a slight phlebitis of the external saphenous occurred. This cleared up rapidly and she has passed on to a smooth convalescence. The injections were given very slowly. A chill followed each injection but there was no depression of the respiration which is the special danger warned against by Meltzer.

In conclusion I might outline the treatment that we now follow when the temperature rises after labor. Breast, lung and throat conditions are ruled out. We exclude pyelitis, malaria, and typhoid by appropriate tests. A cathartic is given and attention is paid to emptying the bladder. A full condition of either bladder or rectum interferes with proper contraction and drainage of the uterus. When there has been a recent perineorrhaphy the wound is inspected and stitches removed if there is much tenderness or edema. The abdomen is examined, noting height of the fundus, areas of tenderness or resistance and whether there is tympanities or rigidity present. If there is a high rise of the pulse rate accompanying the temperature, cultures are taken from the cervix and uterus whether the lochia is foul or not. At this procedure inspection can be made of the vagina and cervix, especially noting if the latter is distinctly patulous and gaping. Such a condition of the cervix points to retained portions of membrane or placenta. If the pulse rise is slight in comparison with the temperature rise no vaginal inspection or cultures are made. After this preliminary information has been obtained, the bed is elevated sharply at the head and an ice-bag applied to the lower abdomen. The position of the bed facilitates drainage and the ice-bag induces a better tone in the uterus, possibly somewhat inhibits bacterial growth, and certainly gives great relief to the patient if there is any pain. On the second day if the tempera-

ture is down our troubles are over and we have done no damage. If the temperature remains high or recurs we are justified in going ahead on the strength of the report from the bacteriologist which by this time will be available. Should the gonococcus or the streptococcus be reported the former treatment is simply continued.

If the colon bacillus is found or "no growth" reported and the lochia is foul we give a gentle intrauterine douche. At this time with the continuance of temperature and in the absence of the gonococcus or streptococcus it is permissible to make a gentle digital exploration of the interior of the uterus and remove any fragments of secundines that are present or release possibly retained lochia. This is in no sense of the word a curettage. We never curette except in incomplete abortions at or before the third month. The further course of the treatment will depend on the development of the case and already has been suggested in the description of the various conditions that may arise in bacterial infection of puerperal women.

29 EAST SEVENTY-SEVENTH STREET.

CHORIOEPITHELIOMA.*

WITH REPORT OF THREE CASES.

BY

M. CATURANI,

Gynecologist to the Italian Hospital,
New York City.

(With three illustrations.)

FOLLOWING the first few cases of this disease reported in this country by Boldt and Williams, the detailed papers and articles of Brothers, Bandler, Ladinsky, Frank, Findley, Stone and others have so completely covered the subject that this paper will be but a brief résumé justified by the finding of three new cases.

Netzel in 1872, Mayer in 1876, Chiari in 1878, Hofmeyer in 1885, and Meyer in 1888 observed and reported a disease similar to the above, but its nature was not clearly understood until Sanger in his paper before the Leipzig Obstetrical Society first described a tumor differing absolutely from any known tumor and emphasized its peculiar relation to pregnancy. To this he gave the name of malignant deciduoma.

Since that time the number of cases reported have increased,

* Read before the New York Academy of Medicine, Section on obstetrics and Gynecology, January 26, 1911.

and at present the literature contains about 300. Most all are agreed as to its pathological nature, but the obscure etiology and the strange diversity in clinical evolution of the various cases renders it desirable to increase our statistics in the hope that future study may be able to clear up some of the unsolved problems.

Pathogenesis.—According to the numerous pathological interpretations different names have been assigned to the tumor, but all the opinions advanced can be reduced to the following:

a. Maternal origin: A tumor of connective-tissue nature (Sanger, Pfeiffer, Veit);

b. Fetal origin: A tumor of an epithelial nature (Aschoff, Marchand, Teacher);

c. Intermediate: Mixed epithelial, the cells of Langhans being of fetal origin and the syncytial cells of maternal. This was the first theory of Marchand, Frankel, Williams, etc.

According to Sanger the tumor is made up of cells derived from the connective tissue of the decidua, hence the name "deciduoma, or deciduo-cellular sarcoma."

Among the most earnest supporters of the connective-tissue theory is Veit who, modifying it, believes in the preexistence of a sarcomatous condition of the uterine mucosa, while pregnancy would merely give to the tumor its characteristic appearance.

The first to consider the fetal origin of the tumor was Gottschalk (1894), but he believed in the beginning that he had to deal with a sarcoma of the chorionic villi. It was Marchand who, under special fortunate circumstances was in a case of hydatidiform mole of the uterus able to find the same epithelial formations of the chorionic villi with invasion of the muscularis of the uterus, that were found in chorioepithelioma malignum. Having in this way determined the nature of the elements constituting the tumor, it remained only necessary to establish their origin, and that was not made clear until embryology could properly define it.

Through the work of Hubrecht, v. Beneden and Duval on the subject of animal placentation and later through that of Peters, Leopold and Webster, on human placentation, it was shown definitely that the trophoblast was of epiblastic origin. With the physiological importance of trophic changes of cells of epiblastic formation (Langhans and syncytial) was recognized the invasive and destructive power of these cells upon the maternal tissues, but limited to the uterine mucosa. This trophic and invasive power is especially characteristic of syncytial elements

(the polynuclear protoplasmic masses with no cellular walls—affusion of the Langhans cells due to the corrosive action of the blood).

With these embryological findings as a basis, the exclusive chorionic nature of the tumor was first pointed out by Apfelstedt and Aschoff in 1896, and definitely by Marchand in 1898. Since then the tumor has gone by the name of chorioepithelioma, given it by Marchand. This interpretation has been generally accepted, as appeared in the discussion which followed Teacher's paper read before the London Obstetrical Society in 1903. Teacher states that Veit accepted the latter view of the fetal origin of the tumor, still believing, however, in a maternal condition favorable to the development of the growth. Those cases occurring independently of pregnancy or in the male testicle, mediastinum, mesentery, etc., do not weaken the theory of the established nature of chorioepithelioma. These tumors, considered teratomata owing to their genesis from the fetal inclusion of polar cells of an impregnated ovum (Bennett-Marchand), are able to produce representatives of any one or all of the layers of the blastoderm. Frank, in a recent original work, added new facts to those given by Pick and Risel in support of the ectodermal origin and specific nature of the elements of these growths. While Marchand, in 1903, concluded that the specific nature of chorioepithelioma can no longer be doubted, the possibility cannot be excluded that occasionally similar tissue elements may occur in other tumors. But Winter has recently stated: Chorioepithelioma in the male is intensely malignant. So far, fetal villi have never been demonstrated in man, but in the histological composition the tumors appear to be absolutely identical, although the neoplasm originates in ectodermal elements. It is, in fact, a masculine malignant ectodermal syncytioma, not a malignant chorioepithelioma. A malignant syncytioma in woman is a malignant neoplasm of the epithelial covering of the fetal villi—a true malignant chorioepithelioma.

Etiology.—The etiology of the tumor is the most important question for study, since from a practical standpoint it may offer important directions in prophylaxis and treatment.

Pregnancy seems to be an essential factor, although the case of Lubarsch in a girl of thirteen and that of Pick in a girl of nine years, which might have been considered to be teratoma, offer an exception. In almost all other instances pregnancy has figured in the histories of the cases.

Ladinsky states that no cases were reported in which the woman was not in the child-bearing period. Bland mentions a case in which the woman was fifty-eight years old and past the menopause. Similar cases have been reported in the collection of Teacher, and I can add one case of mine in a woman fifty-one years of age, where the tumor developed five years after the passage of a hydatidiform mole, and more than four years after the menopause. Most tumors occur between the ages of twenty-two and thirty-two years, the most prolific period (Ladinsky).

The relative frequency varies in the following way:

1. After expulsion of a mole;
2. After abortion;
3. Before or after a normal delivery;
4. Following ectopic pregnancy.

In Ladinsky's statistics of 128 cases, fifty-one followed molar pregnancy, forty-one abortion, twenty-eight pregnancy at term, four premature delivery, and three ectopic gestation. In Teacher's statistics of 188 cases, seventy-three followed moles, fifty-nine abortion, forty-nine delivery at term, and seven after tubal and ovarian pregnancies.

From these data it is evident that molar pregnancy is the strongest predisposing factor; Findley states, in fact, that 16 per cent. of hydatidiform moles become malignant. The proliferation of the chorionic elements, demonstrated by Marchand as the principal characteristic of hydatidiform degeneration of the ovum and considered by Sfameni as the only factor with no participation of stroma, is considered the first step in the production of chorioepithelioma. Teacher considers the two conditions as closely related as adenoma benignum and adenoma malignum. Pozzi and others consider placental polypi and placental remains as predisposing factors, although Schickele in a recent study on polypi and placental remains, in relation to neoplasms, does not consider such to be the case.

Ollivier Bauregard (1904) considered multiparity a predisposing factor, stating that such lessens the resistance of the maternal tissues to the invasion, and adding that of 254 cases, collected by Briquel, 178 of which gave exact data, 66 had more than five children and but twenty-one were nulliparæ. Race seems to have little influence and we find no data as to the social condition of the patients. With my brief experience I should be inclined to consider that the poorer classes of people are more subject to this disease, owing to their neglect of treatment following abortion or

the passage of a mole, thus disregarding one of the predisposing factors.

Having in a general way considered the predisposing causes, what is the direct cause of this morbid exaggeration of the normal invasive and destructive powers of chorionic elements?

Many theories, from the microbic to the cellular and chemico-cellular, have been advanced. Cystic changes in the ovaries, first considered by Patellani, accepted by Frankel, and still believed in by Williamson at the present time, are considered by others as a pure coincidence. Bandler's idea of the alteration in ovarian secretion and Beard's of the function of the corpus luteum as a modifying factor in the invasive power of the syncytium—the Herlick theory of antibodies and the term syncytiolisin adopted by Veit to explain this idea—are all more or less related, but up to the present time we have no positive evidence of the direct cause. The hypernutrition of chorionic elements following the death of the embryo is accepted by few, and it is by no means certain whether the starting-point of the degenerative changes is in the ovum or in the mother. Durante, who in France has devoted more time than anyone else to this question from the pathological standpoint, in a recent study of a mole, ascribed the cause to endarteritis of the vessels of the villi, by which the chorionic elements receive the nourishment intended for the embryo. He believes this endarteritis to be of a toxic origin, which does not involve the integrity of the syncytial cells. In syphilis he claims that there is also a degeneration of syncytial cells, and therefore mola do not occur in syphilities.

Clinically I was able to follow one case in which a molar formation followed an attempted criminal abortion and another in which the secondary stage of syphilis was accompanied by molar pregnancy. But, after all, we have no knowledge of the exact cause of chorioepithelioma, and it is to be hoped that the practical research in cancer etiology will throw some light on this sister subject.

Course.—The time elapsing between labor, abortion, or the passage of a mole, and the clinical manifestations of chorioepithelioma is variable. In Ladinsky's statistics the average is eight weeks after molar pregnancy, seven weeks after abortion, and five weeks after pregnancy at term. Successive statistics showed greater variability in the period of incubation, but in some cases there was reason to believe that the development of the tumor occurred before the termination of pregnancy and there-

fore the cause of the abortion. Bland refers to one case in which the tumor manifested itself six years after a labor at term, but does not think that the latent period is influenced by the kind and termination of pregnancy.

In my first case the tumor appeared four years and some months after passage of a mole and four years after the menopause. This is in accordance with Teacher's statement that in nine cases after fifty years of age the tumor was preceded by molar pregnancy. This and the longer period assigned by Ladinsky's statistics seem to point to less malignancy in cases preceded by moles.

Cases not treated surgically usually end in death in from a few weeks to a few months. Metastases through the blood-vessels appear at an early stage, and their presence is considered one of the chief characteristics of the disease.

The lungs appear to be the most frequently affected, next the vagina which in many cases is the primary site of the disease, but all other organs may be affected. With the formation of metastases the patient rapidly passes into a cachectic state, generally accompanied by fever.

Diagnosis.—The diagnosis is made on the clinical symptoms, substantiated by the pathological findings. In some cases this is not difficult. Persistent hemorrhages following the passage of a mole, or an abortion, or labor at term, especially if a foul discharge is present, call for a most careful investigation. The presence of small, extremely vascular tumors in the vagina is almost pathognomonic. These tumors resemble in appearance varicosities. In the second of my cases a small tumor of the vagina closely resembled an angioma with a slight ulceration in the center. Physical examination of the uterus shows increase in size which is not proportionate to the period of involution. The uterus is soft and the os is usually patulous. The cervix often readily admits the exploring finger which finds within the uterus freely bleeding fungosities. Intramural fibroids and malignant diseases of the cervix are easily excluded. Placental remains are easily differentiated because of their smoothness in feel and the ease with which they may be detached from the uterine wall. Sloughing submucous fibroids are often pedunculated and have not the characteristic friability of chorioepitheliomatous masses. The latter are more fungous and arborescent, and their extreme friability renders it easy to remove pieces of spongy brown tissue (due to blood extravasated into the growth) for microscopical examination. The history of a previous pregnancy, the age of

the patient, the consistency of the os make it easy to exclude a cancer, although age and the menopause, as in my first case, are apt to suggest cancer of the body. The usual site of the growth is on the fundus and the posterior wall.

Many authors object to the use of the curet in the uterus on account of the danger of perforation of the friable walls and the possibility of disseminating neoplastic elements by opening blood-vessels. While I admit that extreme care should be used in curettage, it is absolutely essential to get deep curettings to make positive the diagnosis to the pathologist. In doing a curettage, I recommend successive painting of the interior of the uterus with formaldehyde, the action of which is to fix cellular elements and tends to check their migration. This removes one of the objections against the use of the curet.

In the third of my cases, the microscopic examination of the first specimen shows the presence of chorionic elements, but the diagnosis was doubtful. In the second specimen the deep infiltration of the muscularis made possible the diagnosis of its malignant tendency.

Without going into the details of the pathology of the tumor, it is sufficient to say that the distinction of benign and malignant moles, benign and malignant deciduoma, show the uncertainty of anatomical findings. While the behavior of the chorionic elements in a mole (the invasions of the connective tissue) would point to malignancy, such is generally not believed. The presence of chorionic elements in the uterine mucosa persisting for a few days after delivery in normal conditions adds to the doubts and difficulties in diagnosis. Careful and repeated examinations are necessary.

The clinical course of these cases, especially if there is persistence of hemorrhage after curettage, is of great aid in diagnosis. Deep curettage must be made in doubtful cases if we expect the pathologist to find evidences of an invasion of the muscularis.

Prognosis.—Notwithstanding those few cases in which spontaneous cure was reported, and those in which cure occurred after a partial operation, as in the case of Noble, chorioepithelioma is justly considered one of the most malignant of tumors. Those cases are but the exceptions that prove the rule, and must show clinical if not anatomical differences to the usual disease. Thus, Teacher's statement that those cases in which villi were found were the less malignant proves that a further study into the histology of these tumors will probably show different states of

malignancy or a different power of resistance on the part of the affected tissues. Postoperative results, given by Teacher in ninety-nine cases, showing recovery in 78.5 per cent. following mole, 55.5 per cent. following abortion, and 47.3 per cent. after pregnancy at term, certainly point to a less malignancy in chorioepithelioma following moles.

Treatment.—It should be our greatest desire to prevent the occurrence of these tumors, and it seems essential that all placental remains should be removed after confinement, that a curettage should be done as a routine measure following "incomplete abortion," not only as a prophylaxis against infection, but against the possibility of chorioepithelioma. Especially should a careful curettage follow the discharge of a mole, remembering that Findley states that at least 16 per cent. of moles become malignant, and taking as clinically exact the statement of vander Hoven who considers all moles potentially malignant. In my first case the disease remained dormant for five years following the passage of a hydatidiform mole. Had a curettage been done immediately after its passage, the woman might not have developed the disease.

We find in the statistics of Teacher that chorioepithelioma occurred seven times following tubal pregnancy; this leaves open the question of the advisability of not removing the tube in all cases of ectopic gestation.

Once the diagnosis of chorioepithelioma is made, complete removal of the uterus and adnexa is indicated unless the condition of the patient absolutely forbids the operation. Metastases in the lungs or other internal organs are no contraindication to the operation, since it has been found that removal of the parent tumor is often followed by spontaneous disappearance of the metastases. In those cases in which fever, hemorrhage and foul discharge are present, I have found a beneficial effect, as in my third case, from a careful and thorough curettage with an application of formalin to the uterine cavity then waiting a few days before operating, to permit my patient to get into better condition. When the tumor seems to originate in the vagina, the question immediately arises as to the advisability of the removal of the uterus. The latter organ cannot be considered innocent unless a deep curettage has been done and the scrapings found normal under the microscope. Even then the possibility of chorioepitheliomatous nodes being buried deep in the muscularis must

be considered, and it seems advisable to the writer to remove the uterus and adnexa in all such cases.

CASE I.—Mrs. E. P., Italian, fifty-one years old, came under my care in 1905; has had nine children and three miscarriages. No history of any infection. Five years previous to her present illness she missed her period for three months, then expelled a hydatidiform mole. One month later she had a profuse hemorrhage lasting many days, but had no curettage. The menopause followed, and in June, 1905, she had a metrorrhagia. Two months later she began to cough and expectorate blood. Examination of the pelvis showed a uterus the size of a large orange, soft and



FIG. 1.—Invasion of uterine fundus by syncytioma malignum.

movable. Cervix slightly patulous, but normal. She had a sero-sanguineous discharge of an offensive odor. Suspecting carcinoma of the uterus, I curetted and removed a mass of soft, friable tissue from the posterior wall and sent the curettings to the pathologist. There was no considerable hemorrhage at the time of the curettage.

The report of the pathologist is as follows:

"Microscopical examination of tissue, received December 15, shows the presence of deciduoma malignum, known also as syncytioma malignum, although you did not state that the tissue was removed from the uterus. The growth has all the histological features of the malignant growth which is frequently to be seen after abortion. (Signed) H. Brooks."

The general condition of the patient prevents doing a radical

operation. She was extremely anemic and emaciated, and had a metastasis in the right lung which gave an area of dullness the size of a silver dollar. The patient died three months later.

CASE II.—Mrs. M. S., Italian, aged twenty-six, has had three children, no miscarriage. The last confinement was September 15, 1907, with normal labor. She was out of bed on the eighth day; six days later she began to bleed profusely and every effort on the part of her physician to stop it was unsuccessful. I saw her first on October 7, twenty-two days after the confinement. Vaginal examination showed the presence of a tumor the size of an almond



FIG. 2.—CASE II. Vaginal metastasis. Low magnification.

on the anterior vaginal wall about an inch from the introitus. The tumor was soft and irregular and bled to the touch. The uterus was large and soft, and discharged a sero-bloody fluid. On October 8 I removed the tumor, curetting well away from the diseased tissue. Curetting the uterus, I removed a teaspoonful of small bits of friable tissue. These were sent to the pathologist who reported as follows:

"Examination of tissue, removed from Mrs. M. S., shows histological structure of chorioepithelioma. Proliferation of the chorionic elements was seen in both specimens, in that from the uterus and that from the vagina. Hysterectomy is advisable. (Signed) H. Brooks."

On October 18 hysterectomy was done by me and patient was discharged twenty-days later. Examination one month later showed patient in good condition. In January, 1908, she had an attack of nephritic colic. I examined her and found in the region of the left ureter a soft tumor the size of a nut. Her temperature was high. A month later she had a similar attack. The urine showed the presence of blood and I suspected a recurrence of the disease in the pelvis with a metastasis in the kidney. She died in May, 1908.

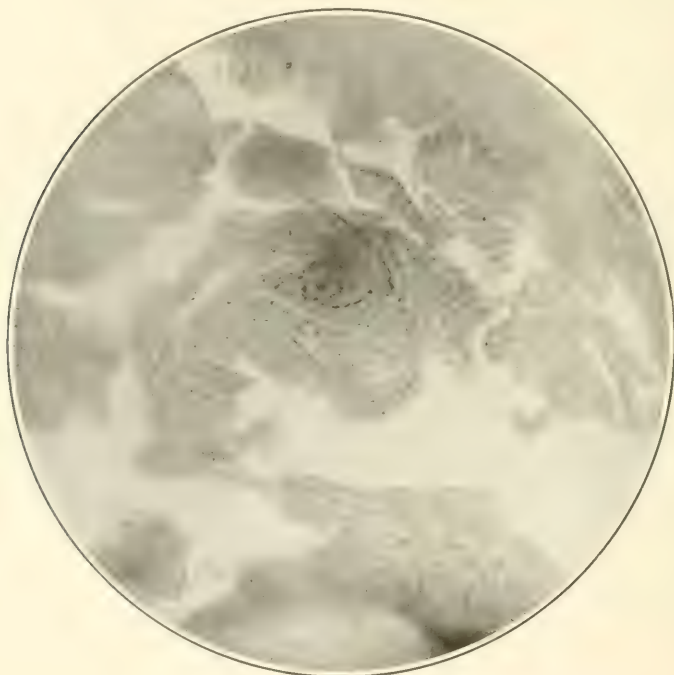


FIG. 3.—CASE II.

CASE III.—Mrs. C. S., Italian, thirty years old. First menses at nineteen. Married five years, two children. The last child was born in November, 1905. About six months after the last birth she passed a hydatidiform mole and began to bleed profusely and irregularly until May, 1907, when the periods appeared for two months regularly. Then she did not flow at all for two months succeeding. In October, 1907, she had a profuse flow with clots and was curetted for incomplete abortion. In the course of the next few months she was curetted three times. The last time a specimen of the curetting was sent to the pathologist who reported he could not be positive of malignancy. When I first saw the patient she was very anemic. Temperature 100° to 101° at night, preceded by chills. Examination showed a large,

soft movable uterus, cervix open, and a discharge of foul blood and serous fluid. On January 8, 1908, I cureted as deeply and thoroughly as I could, hoping in this way to improve the patient's condition until I could submit the scrapings removed to the pathologist and get his report, although the soft, friable spongy material removed by the curette, together with the clinical history, was sufficient to make a clinical diagnosis.

Report of the pathologist: "Examination of the curettings from the uterus of C. S. shows the histological structure of deciduoma with malignant tendency. In my opinion hysterectomy is advisable. (Signed) H. Brooks."

I removed the uterus with adnexa, and the patient recovered. Since operating, I have examined the patient twice and found her in good condition. She remains in perfect health at the present time.

CONCLUSIONS.

1. There is a relative frequency of this disease among the poorer classes of people who are less apt to seriously regard the predisposing causes, such as incomplete abortions and passing of moles.

2. For the same reason, these cases must be more common than the statistics would lead us to suppose.

3. They seem to occur more frequently after the expulsion of moles than after normal labor.

4. When a pathological examination is doubtful, we should be guided by the clinical course and history as to operative intervention.

5. The character of malignancy is greater after labor.

6. Prophylaxis is of great importance, and we should curet all cases after expulsion of moles, as the cells embedded in the tissues in my first case developed the malignant disease after five years, and in my last case a thorough and early curettage might have prevented the development of malignancy considering its slow development.

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THE HYSTEROPEXIES.*

BY

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THERAPEUTICS is the only point of contact between medicine and the public and is the only part of medicine appreciated by it. As all medicine from ages back has been primarily empirical, the tendency to see conditions from the outside by therapeutic application and effect appeals strongly not only to the lay mind but in a large measure to the professional. Not until within recent times have the fundamentals become so broadly studied, so accurately observed, and so fully and completely searched into

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that diagnostics other than the most superficial have become an important factor in outlining therapeutic activities. As large bodies move slowly, so the medical mind, whether in the physician or in the layman, has not as yet fully comprehended these facts. It is innate in all of us to hunt for specifics—for some one method of treatment which may become a panacea. Equally innate in us is the tendency to superficial observation and the quick arguing from condition to therapy without a rational understanding of the numerous factors pertaining thereto.

No branch of medicine has in the past appealed more largely to the emotions and less to the intelligence than obstetrics, and even to-day popular superstitions hang more closely to obstetrics than to any other branch. Gynecology, a recent correlary of obstetrics, has had its evolution from the simple and superficial as have the other branches of medicine. Only a few years ago it consisted principally of endocervicitis with caustic silver for treatment. About the same time abnormal positions of the uterus were exploited and their connection with a symptomatology claimed, but not until the abdominal surgeon made possible a good and sound understanding of the several moving pathologies of the pelvis has it become possible to estimate the importance of uterine deviations and reasons for distresses felt and to scientifically outline a proper treatment.

Empiricism in surgery like empiricism in Galenics leads to a groping for a specific and never finding it. Some of the specifics in medicine have come by accident; others through a charlatan, but all of the specific treatments in surgery have come through an accurate knowledge of conditions and its sensible applications.

Nowhere is the evidence of this seen better than in the treatment of uterine deviations. Ignorance and desire to advertise a name have led to the exploitation of many unnecessary operations, and it is doubtful if any surgeon can name and describe each of the more than five score methods of treating displacements.

Anatomy in its conventionalism has depicted the body according as it is perceived by the eye. Eye analysis has become so much a fiction of medicine that in large part the ideas of symptomatology and of treatment have been regulated thereby. The uterus described by Gray should never be the uterus of the gynecologist. This organ is a mass of muscular fibers under varying tension with fibers passing from each angle in ligamentous appearance but yet uterine structure. From the upper angle, as round ligaments, fibers pass to the inguinal canal, gradually

losing the muscular and acquiring instead fibrous tissue. In the inguinal canal toward its attachment at the pubes it is all fibrous. Running posteriorly from the cervix to the sacrum there is another bundle of muscular tissue in part fibrous. With the changes of age and disease action, and sometimes due to natal histologic defect, the fibrous tissue predominates. Running from the uterus laterally a small quantity of unstriated muscle fibers is found in the broad ligaments.

The arterial supply of the uterus is so perfectly arranged that there can be no defect. Much is heard of interference with the arterial supply, of congestions brought about by flexions, but the circle of Robinson is so complete on both sides that it is impossible to materially interfere dynamically with the circulation of this organ. No one has yet seen a uterus change in color or appearance by being retroflexed or by being brought again into position.

Nervous ganglia are found in the uterus as in the intestinal tract. They are a part of and correlate with the branches of the sympathetic numerously found in the broad ligament and extending up into the ganglia lying over the sacrum. The sympathetic system of nerves in large part regulates utero-ovarian action. It governs, controls and functionates these parts. If the nerves were as graphically discernible to the eye as the uterus little doubt is there but that the neurologist would claim many of the diseases of the pelvic organs. Being hidden, seldom seen even in operative work, and functioning quietly, their immense importance in gynecological thought, diagnosis and treatment has been much neglected.

Physiologically speaking, the ovaries, particularly the chromaffin substance in the corpus luteum, have an important part in the study of uterine functions. There is a strong nutritional sympathy between these two structures. Remove the uterus and the ovaries undergo an atrophy due to incomplete ovulation. Remove the ovaries and the uterus shrinks in premature senility. The secretion of the corpus luteum is said to be the vasoconstrictor of the uterine circulation, keeping up a proper tonus.

In order to judge scientifically and accurately the various ailments and debilities incident to and associated with uterine malposition one should include in his argument a well-balanced understanding of the functionings of each element of what might be termed the physiological uterus. The uterus has a normal position, but not a normal direction. It possesses a considerable

degree of motility. No one structure is called upon to keep it in position, but an even balancing of tissue tension is sufficient reason for its placement. The parametrium, which extends laterally and contains muscle tissue, elastic fibers and spiral blood-vessels, is seemingly the more important, but below this must be a vagina of perfect structure whose anterior wall has not been damaged by traumatism or bladder distention and whose posterior wall is in perfect attachment with a well-sustained rectum and a perineum whose aponeurotic and muscular content has neither been lacerated or divulsed. The uterus normally enters the vagina at an angle, the posterior wall of the vagina being longer than the anterior, producing a normal tendency of the fundus forward. With the broad ligament in normal tone and the sacral ligaments possessing good muscle under proper tonus the tendency of the fundus uteri is to make an excursion backward and forward with distention or emptying of the bladder and with movements of the body.

Retrodeviations and descenses are not prone to occur independent of preexisting lesions. Conditions leading up to them are of three kinds: *First*, antenatal defect of aponeurosis and musculature of the pelvic floor; *second*, disease states of the uterus and its extensions which bring about myotic changes, such as lesions of the uterine supports complicated by relaxation, atrophy of the utero-sacral muscle, and traumatism of the pelvic floor with lacerations of important structures weakening its more important supports; and *third*, traumatism from within the abdomen, for example, by a cecum which through a past chronic ceco-appendicitis has had its musculature absorbed, leading to a subsequent distention and pouching into the pelvis where it may override the uterus and force a retroflexion. A similar effect may be produced by the transverse colon which frequently becomes pendant, kinks at the splenic flexure and is loaded with heavy fecal matter. The sigmoid, too, at times traverses the brim of the sacrum and acts as a hammer when heavily weighted with fat and feces.

The symptomatologies of uterine deviations are collectively expressed under the term "uterine syndrome." They are induced either by a flexion or an associated condition. A uterus under slight retroflexion dragging on the broad ligament will produce a distress similar to a drag on any mesentery. If the displacement be continuous and to such a degree as to elongate the ligament, drag will cease and the woman will then have a

retrodisplacement without symptom. If there be slight descensus the utero-sacral muscle will be put on tension and may contract in order to restore position. Irritation of this muscle gives considerable pain. It becoming paralyzed or atrophic, pain ceases. If the uterus be seized by a tenaculum and dragged upon, the first tissue to be put on tension is the utero-sacral muscle. This being severed, the next tissue to be affected is the broad ligament, but not until the parametrium has been severed is any strain put on the round ligaments, so, in the production of retroflexions and the causing of distress under normal conditions the important structures to be considered are the utero-sacral muscle and the uterine mesentery.

In types of metritis and parametritis without lymph exudate do we more commonly find associated displacements distressing. Nerves in an inflammatory tissue seem to induce the sensation pain which is not normally their function. Hence it is that we have no distress in affections existing in healthy tissues. The extensive nerve supply of this pelvic organ very well explains the numerous reflex symptoms originating from it. Continued irritation sooner or later produces an exhaustion of the sympathetic plexus at the brim of the pelvis bilaterally. Exhaustion of this plexus leads to the possibilities of irregular vasomotor impulses, congestions, and organ functioning. With an exhaustion of this plexus stimuli may pass further up in the sympathetic, allowing of the perversion of normal impulses of the organs under their control. This will explain constipation, nausea, epigastric pulsations, and other abdominal phenomena of the "neurotic." According as the woman has some antenatal nerve defect or lax habit acquired in the education of life, will she be influenced by distresses. Will-power and self-control being in abeyance, the emotional will predominate and the patient have headache, posterior cephalalgia and hysteria,

Owing to a lack of comprehension of the numerous factors pertaining to uterine displacements, or, perhaps, to a desire to exploit an operation, surgeons have from their several viewpoints treated these conditions variously. Some recognizing only the position of the fundus uteri have been satisfied with its replacement. Others noticing the descensus have selected that in their mode of attack, but the more intelligent careful surgeon has measured the dynamic value of each tissue, has studied into the causative factors of the displacement, never forgetting that

the woman's distress is not an ocular concept but an association of lesions.

Surgeons are apt to be short-sighted. Dührssen and Baker have both given us statistics of recurrences after operation, showing a large percentage of failures. Statement is not made whether these failures mean recurrences of deviation or failure to remove the distresses complained of. Supporting the fundus by attachment to the urachus or by that surgical abomination, ventral suspension, is to be condemned because of the large percentage of recurrence (25 per cent.) because of the unsurgical method of using an artificial support that does not follow the lines indicated by nature, and because of the possibility of hernial inclusions. Shortening the round ligaments by external methods is pleasing and attractive, does away with the weakest part of the cord and subjects the patient to little traumatism, but it does not allow of a proper inspection of the abdominal contents and conditions. It, too, has a large percentage of failures (12 per cent), due to omental adhesions to the fundus uteri, to a stiffening through inflammatory action of the broad ligaments, or a failure to appreciate and rectify the several visceroptoses which often exist. The internal shortening of the round ligaments has been variously effected. Some methods are most scientific, like the Gilliam and Ferguson; some, like the Webster (which has a recurrence of 31 per cent.), apparently not as much so. Goff's nor Bovée's utero-sacral shortening does not seem to have gained professional confidence, probably because the utero-sacral muscle is not always tangible and its position such that if the scar tissue at the point of operation become tender greater misery is added. Of the vagina shortenings, Shauta's amounts to a fixation. Cystic suspension gives comfort and is free from tender cicatrices, but a uterus that is heavy or pressed upon from above may be easily re-retroflexed, pulling the bladder with it.

A factor which has negated many of the operations is tender scar tissue. We have seen it in the Alexander-Adams method, in the ventral suspension, and in the internal shortening of the round ligaments where the scar has been on the line of traction. The Gilliam operation and the Ferguson modification of it seem to be fairly free from distress of that type. So, also, is the cystic suspension. Another test of the value of the several operations can only be given us by the active obstetrician. There are no complete statistics published of the effect of the several

methods upon a pregnant uterus in its ascent or at the time of delivery, nor of the power of restitution after delivery.

A surgeon's attitude toward hysteropexies will vary with his success. Most gynecologists have begun with the Alexander-Adams and not changed until they saw their patients returning. Good work may be done above the bone or below it. Successes depend as much on the surgical ability of the operator as on the mode of procedure, but both patient and surgeon should thoroughly comprehend that operative work is but one step in therapy.

A study of the different methods employed in these conditions (some of them now more or less historic), suggest that uterine rest is the main factor to be obtained. Metritis and its associated parametritis are aggravated and continued by movements of the body: Walking or breathing so move the pelvic parts and keep up minor traumatisms that congestions continue. Tampons and pessaries, which act as temporary splints, and operations that give relief and support all tend to a recuperation of local nerve tone and a return to normal of vascular changes, but in hysteropexies as in the treatment of other conditions, we must not forget the individual. We must study her nerve tonus, her susceptibilities, determine whether she is easily affected by pain, and find out the condition of her toxin-destroying organs, intestinal epithelia, liver and internal secretions, paying attention to secondary anemias and the circulation. A woman who has such lowered nerve vitality as to be annoyed by a displaced uterus will have coexisting tissue and functional defect in other organs of the body. Particularly important is it to remember that the sympathetic system is closely associated with the vasomotor, and that which exhausts the action of the former will also of the latter, and that any type of therapy, drug, hydropathic or other, which invigorates and gives tone to the arterial circulation of the pelvis will tend for betterment.

The object of this paper is to encourage a broader study of woman and her miseries, of the many conditions inducing and perpetuating the uterine syndrome, of the relation of uterine deviations to other lesions, and the necessity to skilfully select a proper operation with other treatment added which shall not only comfortably and permanently replace the organ, but relieve the woman of coexisting pathologic states.

REPORT ON FOUR CASES OF ECLAMPSIA, WITH
REMARKS ON THEIR TREATMENT.*

BY

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AMONG the cases of toxemia of pregnancy which have come under my observation during the past year were four with eclamptic manifestations, in which a certain interest attaches to the method of treatment. I have no desire to draw conclusions from such a limited number of cases, but hope to be able to pursue the subject further as the proper material becomes available. The individual cases here referred to do not present any noteworthy features as regards the toxemia and its symptoms, so that the history of each patient will be related as briefly as possible.

Examination of the salient features of these cases shows an absence of mortality in both mothers and children. In comparing the two methods of treatment employed, attention is directed to the good results which followed the conservative method of treatment in the last case. There was no difficulty attached to the vaginal Cesarean section done in the first three cases, and the operation was completed very rapidly as regards the delivery of the child. But in each instance the suturing of the cervix was accompanied by considerable difficulty, so that in two of the cases it could not be carried out, but in one of them it was done at a later period. There was more time lost in endeavoring to do this part of the operation than in the actual delivery, which means that the patient was necessarily kept under the influence of the anesthetic for a prolonged period, and that the essential eliminatory measures had to be delayed until the patient could be removed from the operating-table. In the fourth case, although the actual delivery was delayed for a period of at least twelve hours the eliminatory treatment could be kept up during the entire time and the patient did not require an anesthetic at all, completing her labor without difficulty. The presentation of this single case will not permit my drawing any conclusions as regards the method of treatment employed in the latter as com-

*Presented at a meeting of the Society of the Alumni of the Sloane Maternity Hospital, January 27, 1911.

pared with the former, but I do wish to state that it confirmed in my mind the possibility of doing without harm this very thing in selected cases.

CASE I.—The patient was a young primipara about eight months pregnant who was perfectly well until a few days previous to admission, when she complained of headache and dizziness. On the evening of March 5, 1910, she was suddenly seized with a general convulsion, followed by two more during the next three hours. She arrived at the hospital about 9.30 P. M. in a comatose condition, with no evidences of labor; the cervix admitted one finger and was rigid and thick. The pelvis was large and the child in the L. O. A. position, fetal heart 160, faint. The patient had a number of convulsions after admission. The pulse averaged 100 and was not very tense. As there was no evidence of labor and the cervix rigid and thick, a vaginal Cesarean section appeared to be the most suitable means for quick delivery. The anterior lip alone was incised after stripping back the bladder, and an opening secured sufficiently large to provide for introduction of the hand. An internal podalic version was done without any difficulty. The delivery was completed in about seven minutes, but the small premature child was resuscitated with some effort. The uterus contracted firmly and the placenta was expressed thirty-five minutes after the birth of the child. A hot uterine douche of sterile water was given, likewise 30 minims of "Ergotole" by hypo. The operative wound in the cervix was found to be clean cut without any other lacerations. The upper three-quarters of the wound was closed with three chromic gut sutures and the lower portion left open to provide for thorough drainage. The sutures were introduced with some difficulty, as the cervix could not be pulled down sufficiently to bring the upper angle of the wound into the field of vision. The uterus was packed with strip gauze and a piece introduced into the wound between the bladder and uterus. The woman's pulse had come down to 88, and there were no further convulsions. The woman made a good recovery, likewise the baby.

CASE II.—(A. N., 30657.) Patient a primipara, age twenty-one, admitted November 7, 1910, with a history of being eight months pregnant and having had three general convulsions before admission. The patient was comatose and the pulse was 130 with tension very much increased. The fetus was in the L. O. A. position and the heart rate 140. The cervix was two fingers' dilated and very rigid and the membranes were intact. The woman impressed one as being in a very bad condition and a vaginal Cesarean section was decided upon. The operation was done in the usual manner, both anterior and posterior lips being incised. After rupturing the membranes the head was brought down through the cervix with the forceps and readily extracted. After delivery of the placenta the uterus and vagina were packed with iodoform gauze. The patient's condition did not seem to

warrant keeping her under anesthesia sufficiently long to complete the suture of the cervix. This woman had fourteen general convulsions between the hours of 11.30 A. M. (time of operation) and 3.40 P. M. to which must be added the three before labor, making a total of seventeen. She did not respond to the hot packs for some hours, but then made a good recovery, and there was nothing eventful about her puerperium. The urine also cleared up quite promptly. The baby weighed 2,340 grams and presented nothing abnormal. At the time of discharge on the nineteenth day the wounds in the anterior and posterior lips of the cervix were healing by granulation, the patient refusing any secondary operations at this time as she was anxious to go home. This was probably the worst case of the series as regards the severity and number of convulsions.

CASE III.—(A. N., 30818.) This patient was forty-two years of age and a ix-para. She was brought to the hospital on November 25, 1910, with a history of having had pains for twelve hours and a general convulsion two hours after admission. A second convulsion occurred in the ambulance and a third shortly after she came into the hospital. She had had three normal deliveries with uneventful labors and five miscarriages. The patient was apparently at full term, very obese, with a pulse of 116 and much increased tension. The cervix was two fingers' dilated, thick and very tough, and presented several cicatrices of considerable size and density, which would have resisted all attempts at dilatation. There was also a marked cystocele and rectocele. It was believed that any attempt to stretch the cervix would result in an uncontrollable degree of laceration, and as the woman's condition was far from good, a vaginal Cesarean was decided upon. Both the anterior and posterior lips of the cervix were incised, the membranes ruptured, and an internal podalic version readily done, the delivery being completed in less than ten minutes. After extracting the placenta an attempt was made to suture the incision, but difficulty in approximating the edges led to abandonment of this procedure. The uterus was packed with iodoform gauze. The child weighed 2,610 grams and made an excellent recovery. The patient had no further convulsions during the first twenty-four hours. On the ninth day after delivery a secondary trachelorrhaphy was done. The incision in the posterior lip was first closed with two chromic gut sutures after curetting the raw surfaces; the two halves of the anterior lip were similarly approximated with four sutures, the top one being carried up as high as possible into the lower segment. Before suturing the cicatrix in the cervix was excised. All these sutures held and the wounds were thoroughly healed at the time of discharge on the twenty-third day.

CASE IV.—(A. N., 30851.) Patient a primipara at term, age twenty-three. The urine examinations throughout pregnancy had shown a faint trace of albumin and numerous hyaline and granular casts. On admission to the hospital on November 30,

1910, she had had two general convulsions, but there was no evidence of beginning labor. On admission the pulse was 88, with increased tension. The baby presented by the breech and the fetal heart was 140. The cervix was long and the external os admitted the tip of the finger. Rectal irrigations and hot packs were started and it was decided in view of the patient's good general condition, to deliver by conservative methods. The cervix, with the patient under slight chloroform anesthesia, was dilated sufficiently for the introduction of a No. 2 Voorhees' bag. During the manipulations the membranes were ruptured and the cord prolapsed. This was readily replaced and held by the bag, with plain gauze packing in the cervix and vagina. At 2 A. M., that is before the introduction of the bag, the patient had a third convulsion. The next morning at 9.30 the packing and bag were removed and the cervix found to be over two fingers' dilated, thick, but very soft. It was readily dilated by the manual method and the delivery of the child accomplished in twenty minutes from beginning dilatation, by a breech extraction. The placenta was expressed ten minutes later. Whether due to this cause or because the uterus was not packed in the usual manner, a postpartum hemorrhage resulted about two hours later, which was readily controlled, however, by packing. My rule had been to pack the uterus in all these cases of eclampsia, but I was not present at the time of delivery and for some reason or other this procedure was not carried out. This patient had no convulsions after delivery, made an uneventful recovery, and was discharged on the eighteenth day with a moderate laceration of the posterior lip of the cervix. The urine contained a marked trace of albumin with an excess of indican, but this disappeared before the woman's discharge. The child seemed premature, weighed 2,000 grams at the time of birth, but was in good condition at the time of leaving the hospital, and its nursing was supplemented with a milk mixture.

Following this brief recital, I desire to mention the chief features of the general treatment employed in all cases of eclampsia in the service at the Lying-in Hospital. The stomach is first washed out if possible and 4 ounces of a hot saturated solution of magnesium sulphate introduced after the lavage. The rectum is also thoroughly emptied by means of high soap-suds enemata, and after this is accomplished, from 30 to 60 grains of choral in 8 ounces of salt solution are introduced through the rectal tube. The patient is then wrapped up in a hot blanket for fifteen or twenty minutes. During this time preparations are made for delivery by whatever method the case seems to demand. Chloroform is not used as a routine procedure, but is given in case the patient resists examination. It is generally stated that convulsions are brought on by manipulative procedures, such

as vaginal examinations, etc., but I do not find that this is invariably the case. After the patient is delivered we continue the eliminative treatment by means of colon irrigations and hot packs, the pack being given at intervals of an hour, more or less, until a good reaction is secured. For the irrigations I have heretofore used normal salt solution in quantities of 3 or 4 gallons at a temperature of from 105° to 110° , allowing the solution to flow in and out of the colon rather rapidly, as it is desirable to wash out as much material from this locality as possible. Sufficient absorption of the fluid will at the time occur, and it is not desirable that too much be absorbed to further overburden the already congested vessels of the kidney and other portions of the body. If the patient does not perspire freely as the result of the packs it is of no avail to introduce further quantities of the fluid into the system. I have not as yet made use of the normal sugar solution for the purpose of irrigation, but intend to do so as the opportunity offers. For the purpose of securing dilatation of the vessels we employ nitroglycerine in considerable doses, giving two drops of the spiritus glonoin every twenty or thirty minutes until a reduction of the pulse tension follows. Chloral in addition to acting as a sedative also produces vascular dilatation, and it has been my custom to continue this drug in 5-grain doses every four or six hours for some day after delivery. This is practically all the medication employed in these cases. We do not use *veratrum viride* or morphine in our service.

The four cases herewith presented are examples of the average run of eclamptic cases as we get them in the Hospital, except that two of these were especially severe. Notwithstanding this the amount of albumin in the urine was not very great, although the quantity of the urine was restricted. It seems to me that the latter is a fairly safe guide in the prognosis. It is generally claimed that the most rapid means of emptying the uterus are followed by the best results in eclampsia, but in carrying them out the other methods of treatment are sometimes lost sight of. Emptying the uterus should constitute only one step of the treatment and should be carried out with the least possible danger to the mother. This means that the forcible methods of dilating the cervix which have been so largely employed in this class of cases should not be permitted, as we have other means to accomplish the same end. Vaginal Cesarean section or that by the abdominal route, if no contraindications are present, offers an excellent chance for

rapidly relieving the uterus of its contents. There is no doubt whatever but that the former operation can be rapidly and satisfactorily carried out as regards the actual delivery of the child, but the suture of the wound in the cervix and also in the lower uterine segment is necessarily a difficult procedure as it is almost impossible in many cases to bring the upper portion of the wound down into the field of vision. The vaginal tissues are also more or less relaxed as in Case III, and can be kept out of the way only with difficulty. The cervix is so distorted by edema that the margins of the wound cannot be readily recognized. The good results obtained from a secondary operation in Case II would prompt me in the future to have recourse to the same procedure where I have found it necessary to do a vaginal Cesarean section. In addition to giving us a better operative result, this method also shortens the period during which the patient remains under the anesthetic at the time of delivery and allows us to resume at an earlier period the measures for stimulating the eliminatory functions. With continued experience in seeing eclamptic cases, I am not as much alarmed as formerly by the actual convulsions, as their mere number does not seem to influence the prognosis to any extent. In one of my cases the patient had seventeen convulsions and yet made an excellent recovery. On the other hand, I have seen patients die who have only had two convulsions and these not necessarily severe ones. We have also a number of cases on record where the patient went into coma and died without having had any convulsions at all. Convulsive seizures constitute merely one manifestation of the presence of the toxic material in the system.

23 EAST NINETY-THIRD STREET.

REMARKS ON THE TREATMENT OF PUERPERAL SEPTIC INFECTION AND REPORT OF A CASE OF SEPTIC THROMBOPHLEBITIS OF LONG DURATION.*

BY

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THE treatment of puerperal septic infection in the great majority of cases is, I think I may fairly say, simple and satisfactory. But there is a small percentage of them in which grave surgical operations must be considered. The difficulty in decid-

* Read before the Obstetrical Society of Philadelphia, Jan. 5, 1911.

ing upon the course to pursue in these cases is much increased by the absence of clinical or pathological guides as to the course any given case will follow.

Perhaps most of the cases are due to infection of the endometrium or placental site with putrefactive or mild pyogenic organisms beyond which the morbid process does not extend. These are readily cleared up by the removal of the necrotic and sloughing *débris*. When, however, the organisms are more virulent and invade the deeper uterine structure, its veins and lymphatics, the problem becomes more complex and its solution more difficult. If the process goes on to abscess formation in the pelvic cellular tissue, a not uncommon termination, the treatment to pursue is obvious, namely, to open the abscess. If there is lymphangitis or thrombophlebitis without suppuration, what shall we do? Some of these cases will recover, others (perhaps half of them) will die. If we should quite uniformly remove the pelvic organs for this condition before the morbid process extended beyond them, we should have a fairly large mortality, and many women needlessly deprived of their pelvic organs. In 1902 Trendelenburg successfully operated upon a puerperal case of septic thrombosed veins by ligation of the veins. Successful operations of this kind are also reported by Williams, Freund, Bumm, Vineberg, Seeligman, and others. It is obvious that such an operation, to effect a cure, should be undertaken before the thrombus has extended to the vena cava, or better still to the iliacs. Owing to the severity of these cases and the gravity of operations undertaken for their cure, the great majority of them will be treated by means other than surgical, or at least by trifling surgical measures.

On *a priori* grounds an antitoxic serum should prove very valuable. Inasmuch as the streptococcus is the organism most commonly found in this condition, we would expect an anti-streptococcic serum to give results comparable with those of antidiphtheretic serum. In 1899 Williams made an exhaustive report of the cases treated up to that time with serum, and found the mortality no better than in the cases treated without it. Smaller doses were given then than now, and in severe cases it would be proper to give, in addition to other remedies, large and repeated doses of a polyvalent antistreptococcic serum. Begin with 80 c.c. and repeat every six hours until 320 c.c. have been injected. An effort should be made to find the specific organism in the blood or the secretions. But after all the valuable time

which such an investigation requires should not be lost by delaying the use of the serum.

A yet more modern treatment of infection is that of bacterial inoculations. In this procedure the actual infecting organism is secured from the blood, or the focus of infection, cultured, sterilized and suspended in salt solution, thus giving rise to the autogenous vaccine, which is to be administered by the hypodermic syringe. The dosage is to be regulated by the result which follows. "It must be remembered" (say Deaver, Da Costa and Pfeiffer) "that a vaccine depends for its action not upon any direct antitoxic or antibacterial substances, but acts only secondarily by exciting the production of these substances by the patient himself;" or to use Wright's conception, "The rationale of vaccine therapy is the exploitation in the interest of the infected tissue of the unexercised immunizing capacities of the unaffected tissues."

"This fact explains at once why no effect is to be expected in one already overwhelmed with infection, and makes it necessary both to use a smaller dose in proportion as the patient is more toxic, and to wait until reaction is established before giving the next dose. The best rule is this: The sicker the patient and the less satisfactory the reaction, the smaller and less frequent should be the dose. It is well to observe that this is the exact opposite to that which holds good for the antitoxic serums."

Efforts to destroy the infecting organisms or their toxins by injecting some antiseptic directly into the circulation have from time to time been made. Of these, the best known is colloidal silver (collargol), which may be used in a 1 per cent. solution and injected directly into a vein. As much as .06-.10 grams (= .9 - 1 1/2 grains) is recommended by Dimitrin.

I have on several occasions given carbolic acid m_x in a pint of normal salt solution by hypodermoclysis, but am not sure that the good result which has followed was due to anything but the salt solution.

The use of Crede's ointment is based on a similar belief. Fifteen to forty-five grains are to be well rubbed into the skin of the loins or inside of the thighs twice daily.

Nuclein preparations have been administered with a view to increasing phagocytosis. I have employed them, but with how much profit it is difficult to say.

The resisting powers of the patient should be raised and kept at the highest possible level by the use of concentrated nourish-

ment, such as peptonized milk, eggs, predigested beef, grape juice, junket, broths, etc., given at frequent intervals and in such quantities as the stomach will tolerate.

Tonics and stimulants—iron, arsenic, strychnia, quinine, digitalis, strophanthus, camphor, and whiskey were all employed at one time or another during the long illness of the patient whose history I am about to relate—and large quantities of salt solution both under the skin and into the bowel were used and in my judgment were most valuable additions to the therapy.

And last, but not least, I believe that ergot judiciously employed has a distinct prophylactic value. I do not use it routinely after normal labors, but if there be a flabby uterus with offensive lochia and slight elevation of temperature, I conceive that the oxytocic action of the drug will cause the uterus to expel the clots and putrid discharges as well as tighten up the sinuses and thus to a marked degree minimize the absorption of toxic products.

The case which I have to report is as follows: Mrs. S., æt. thirty, was confined on June 10, 1910. I first saw her nineteen days later. The physician in attendance informed me that the labor had been normal, without the use of instruments, and that the placenta had come away completely. The patient nursed her child. Vaginal douches of creolin solution were given by the nurse and upon the eighth day the patient "felt as if something on the left side had been struck" while the douche was being administered. A few moments later a very painful chill followed. The next day douching was repeated without ill effect. Three days later she had another chill. She got out of bed the following day, but pain in the left groin was so severe that she sent for the doctor, who advised her to go back to bed, and treated her with douches and an ice cap to the head and groin for a week, when I first saw her and had her admitted to the Episcopal Hospital. Her history showed that she was a healthy, hard working woman. She had had the usual diseases of childhood, but had never had typhoid fever, malaria, rheumatism, cardiac or renal disease, nor pelvic disease of any kind. She was married at eighteen, had four children living and well, and no miscarriages. On admission to the hospital examination, showed the patient to be pale, with vagina and cervix postpuerperal and without notable laceration. The size of the uterus was about normal (perhaps a trifle enlarged) for the date of the puerperium and there was marked tenderness on the left side of the uterus and in the

left groin. No distinct mass was palpable but rather a sense of thickening and impaired mobility. Temperature 103° . On the following day at noon it was 100° and at 4 P. M. 103.8° , pulse 104 and respiration 40. She passed 24 ounces of urine. The temperature remained for four days between 100° and 104° and pulse between 90 and 100. On July 6, that is eight days after admission to the hospital, the patient had her first chill since she came into the hospital. It occurred at 5.30 A. M. and lasted twenty minutes. Two days later at 2 A. M. she had another chill, three days later at 1 A. M. a third, two days later at 7 P. M. another. Again in two days at 10 P. M. another and so on, the chills occurring mostly at night.

The temperature in the meanwhile fluctuated between 97.6° and 104.6° , but did not go high every day. The pulse varied between 72 and 100, mostly in the 80's. On the fortieth day the temperature after a chill was 105° and now the daily temperature curve was more regular form 100° to 103° . On the forty-eight to fiftieth days, *i.e.*, two or three days after the injection of a vaccine made from organisms taken from the endometrium, the temperature covered the remarkable range of nearly 9° , *i.e.*, from 95.2° to 103.8° . Then it continued to fluctuate pretty evenly until the seventieth day when it remained about normal for one day. The patient's condition except for the very marked anemia (one blood examination showed R. B. C. 1,800,000, W. B. C. 10,000 and Hb. 24 per cent.) seemed far better than the prolonged fever would indicate. Much of the time she had a good appetite, complained of nothing whatever, and as she lay in bed with sometimes a hectic flush, she had the appearance of such perfect health that it was incredible that she should be the host of so relentless an infection. Slight tenderness remained in the left fornix of the vagina and left groin, but the womb was well contracted. At no time was there palpable a large, distinct or fluctuating mass behind the cervix, but only a slight thickening and tenderness to the left of it. On August 18, seventy days after labor, following a period of relative comfort with a temperature fluctuating from normal to $101^{\circ}+$ and pulse in the 80's and 90's, the patient was somewhat restless in the evening, and early the following morning awoke with a severe cramp in the right leg, vomited, and shortly afterward, almost simultaneously, got a pain in the left leg. The pain was very severe, the legs became swollen, cyanotic and cold. The vomiting continued, the patient was covered with perspiration, the pupils widely dilated the pulse

very rapid and feeble, almost imperceptible, the heart sounds were weak, the first and second being very much alike. There was great restlessness, thirst and nausea; and it was thought by the doctors who saw her from time to time throughout the day that she could not live more than a couple of hours. From this time medication and food had to be administered by hypodermic and by the bowel, the nutritive enemas being continued for about two weeks when nourishment by the mouth was gradually resumed. The temperature continued to fluctuate between 97 and 103° until the eighty-seventh day when it remained near the normal line with one or two slight exceptions until the one hundred and second day when she passed out of my immediate care at the hospital. By this time she had lost much flesh, had a septic diarrhea with stools and urine passed involuntarily, and a small bed sore over the process of an upper dorsal vertebra. After she returned to her home, these conditions grew worse; the stools increased to twelve to fifteen daily and numerous pustules developed on the back. She became more emaciated, less able to take nourishment, and became mildly delirious a few days before her death, which occurred on the one hundred and fourteenth day after the birth of the baby.

No autopsy was had, but I regarded the case as one of septic thrombophlebitis, beginning in the veins of the left broad ligament, extending up into the iliac and finally occluding the common iliacs at their junction. With this diagnosis in mind I considered the matter of opening the abdomen and ligating and removing the thrombosed vessels as has been done by Trendelenburg, Freund, Bumm, Williams and others, but did not adopt the plan because of the length of time which had elapsed before she came under my observation, and because I could not tell how far the thrombus had advanced. Numerous blood cultures were made with negative results. A culture from the intrauterine cavity yielded a diplostreptococcus from which a vaccine was prepared and administered without apparent result, except it be credited with the marked temperature range above referred to, which followed about three days after the first dose.

Following is a record of the numerous blood examinations.

July 1, 1910.—W. C. B. 18,800.

July 5, 1910.—Blood culture negative.

July 7, 1910.—R. B. C. 3,180,000. W. B. C. 16,000. Hg. 45 per cent. Widal reaction negative.

July 12, 1910.—W. B. C. 23,200.

July 17, 1910.—Blood culture negative. Poly. 80. Lymph. 15. Mono., 3. Trans., 1. Eosin 1. R. B. C. 3,550,000. W. B. C. 15,760. Hb. 42. Malarial inspection negative. Intrauterine culture showed diplostreptococcus.

July 23, 1910.—Vaccine prepared from intrauterine culture given. W. B. C. 19,440 before vaccine was given.

July 24, 1910.—W. B. C. 18,080 after vaccine was given.

July 26, 1910.—W. B. C. 16,240.

July 30, 1910.—W. B. C. 16,000.

July 31, 1910.—W. B. C. 17,000. Blood culture negative. Poly. 86. Lymph. 7. Mono. 1. Trans. 6.

August 2, 1910.—W. B. C. 9,360.

August 3, 1910.—W. B. C. 10,000.

August 5, 1910.—R. B. C. 1,800,000. W. B. C. 10,000. Hg. 24.

August 6, 1910.—Blood culture negative. R. B. C. 2,090,000. W. B. C. 10,000.

August 8, 1910.—W. B. C. 14,000.

August 11, 1910.—R. B. C. 2,790,000. W. B. C. 11,000. Hg. 30.

August 12, 1910.—Iodophilia negative. Basophilia negative. Blood cultures negative.

August 26, 1910.—Blood culture negative.

Sept. 10, 1910.—Urine straw color, faintly acid. Alb., heavy trace. No sugar, no casts, triple phosphates. Many W. B. C. No R. B. C. Many bacteria.

1739 NORTH SEVENTEENTH ST.

THE TREATMENT OF ACUTE PUERPERAL SEPSIS.*

BY

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Newark, N. J.

It seems like carrying coal to New Castle to address you, the Alumni of one of the foremost schools of obstetrics and pupils of a most eminent teacher.

The subject under consideration has been one of preeminent importance to me. When one is situated like myself, however, holding a position in two hospitals, one in a district like your east side, with a tenement population of 50,000 or more of Russians and Poles, and the other hospital near an Italian center

* Read at a meeting of the Society of the Alumni of the Sloane Maternity Hospital, N. Y., January 28, 1911.

of some 40,000 population, you will well understand how important this subject has been for me during the thirty years of my service.

At no time in the year are we free from patients suffering thus. The attendants are glad to rid themselves of such cases, and to throw the odium of bad results on the hospitals. On the other hand, we are glad to have these patients for the good we can do.

For years we have asked that these cases be brought in directly as they get sick. Our work is then simplified and exceedingly satisfactory.

The importance of the subject under consideration is shown by the fact that it is estimated that 10,000 articles on it have appeared within the last twenty-five years.

No obstetrician of note considers that he has done his duty unless something has appeared from his pen on the subject. How many articles have appeared on treatment I am unable to say, but the treatment is so varied that he who must rely on the experience of others is sadly at a loss as to what to do, and is thus apt to do too much.

Some do practically nothing, others annoy and harass the patient to the limit of endurance, while some have even suggested and performed extirpation of the uterus.

The results of puerperal sepsis confront the obstetrician first, a little later the gynecologist, and not infrequently the internist. We all dread the disease. You have all read the ending lines of the paper of the immortal Oliver Wendal Holmes, as published in 1843. If not, I would strongly suggest that you do so without loss of time. It must remain a classic in English literature for all times, and should incite the obstetrician to a full understanding in his duty.

The occurrence of the disease at the hands of anyone is commonly considered a reproach to one's personal cleanliness, and I am sorry to say often with right.

On the other hand, beware of calling a brother practitioner unclean, for the disease is bound to occur with even him who is most particular about his cases.

The term "puerperal sepsis" is an association of ideas combining all wound infection in the puerperal tract provided they are produced by bacteria, no matter what the local or general result may be.

By the term acute puerperal sepsis I simply refer to the onset of the disease, its first hours or days.

There are, however, several conditions which might be mistaken for sepsis and which should not be confounded with the subject of my paper. Thus the rupture of a dermoid tumor during or directly after labor would be a case in question.

The following history might interest you. In November, 1899, I saw with Dr. Sarah Mead, at Bloomfield, N. J., a primipara of forty. She had been delivered sixty hours previous with forceps the head having been on the perineum for some time. There was a history of prolapsus of very large ovaries.

Immediately after labor she complained of excessive pain in the abdomen, became tympanitic, and had a temperature of 103° F. An examination at this time showed masses as large as a hen's egg in both round ligaments. There was evidently peritonitis, and I venture to say that the woman had likely a leak from one of these ovaries and that the severity of the onset indicated the leaking matter to be the fluid from the dermoid.

An abdominal section showed two dermoids, one of which had ruptured.

Another condition is an acute paralysis of the bowel, though in these cases no fever is present in the early stage.

Acute appendicitis with the appendix lying behind the uterus should be borne in mind. Such a case was a puzzle to one of your prominent gynecologists and myself some years ago. The patient only got well when the offending organ was discovered and removed.

While I have never seen a sloughing fibroid tumor follow labor, that accident should not be lost sight of.

One of the most frequent infections of the postpuerperal state not often recognized is a colon bacillus infection of one or both kidneys.

An examination and culture of the aseptically drawn urine would be of important diagnostic value. Pain in one or the other kidney is usually present. Within five months I have seen four such cases. The study of urology is getting to be more and more important to the obstetrician.

You will understand the importance of my speaking of these conditions, for the diagnosis of puerperal sepsis is not always simple.

A discussion of the treatment without touching on the prophylaxis would leave a sad gap.

However, a thorough discussion of prophylaxis would itself cover the time so kindly allotted to me. Permit me to touch on a

few cardinal points only. One should not rely on disinfection of the hands only. One should at all times carefully and conscientiously avoid touching septic matter of known virulence with bare hands. To wallow in the mire is socially and surgically unclean. The scientific and exact man avoids it. The brag delights in it for the sake of the impression it makes on the unthinking. The most rigid aseptic precautions are none too good. Constant changes for scientific reasons are always being made and confuse the practitioner. Constant changes are advised and denounced in this restless age of scientific attainments. Teachers in obstetrics and surgery should not be negligent in this matter.

The neat and clean man rarely carries sepsis with him. By this I do not mean to imply that we should not wash our hands most carefully and wear boiled gloves. Such gloves should be drawn on the hands without touching their fingers with the hand of the uncovered side. Practitioners who wear gloves should be as conscientious as to their scrubbing of the hands as those are whose opinion impels them to do without such protection.

Soap, hot water, a brush, ten minutes' time, a bichloride solution, and a 50 per cent. solution of alcohol are means to attain the end, or at least as good as many recommended.

The first vaginal examination should follow a thorough cleansing of the external genitals and the emptying of the rectum of the patient.

Such an examination should be thoroughly but rapidly made and if at all possible should be the last one. In an ordinary case with an intelligent woman and intelligent surroundings this is easily done. Every examination increases the danger.

In the instrumental cases and those unfortunately prolonged cases increased watchfulness as to aseptic detail is imperative.

The antiseptic individual is a dangerous companion in the obstetric-room. I believe enough has been said for prophylaxis.

One cannot separate treatment from pathology. At least a cursory understanding of the latter is essential to a successful treatment. From our present understanding the presence of a pathogenic germ is necessary for an infection. There are three things necessary for the growth of germs.

First heat, second moisture, and third a culture medium, *i.e.*, a pabulum to sustain the growth of the microorganism. Remove any of these conditions and you remove the possibility of multiplication of these elements.

In the puerperal woman we have all three conditions fulfilled.

We are told that a certain amount of susceptibility on the part of the woman is necessary. While this may be true, it is dangerous teaching.

It is necessary for the introduction of the pathogenic germ into the system that there should be a break in the continuity of the tissue. This condition is also well fulfilled in the puerperal woman. Besides the large wound left by the separation of the placenta we might have, and do have innumerable small abrasions in the continuity of the mucous membrane of the parturient canal, not to speak of the more or less large and deep lacerations.

Pathogenic germs are rare in the normal parturient canal. Saprophytic organisms are extremely common. I beg to apologize for rehearsing all this since it is all old to you. I had to touch on it, however, as explanatory to what I have to say later on.

In the matter of treatment the character of the infection is of little purpose, though for the prognosis of the greatest importance. neither should rational treatment be postponed until the real character of the infectious germ can be determined.

In the discussion of the treatment of the acute septic puerperal infection I wish to touch upon three forms only.

A simple collection of uterine discharges retained in the cavity of the organ and undergoing putrefaction. This retention is commonly due to flexion possibly produced by an overzealous nurse who has placed the abdominal binder too snugly.

These patients get very sick with high fever but rarely a chill and recover promptly as soon as the uterus is opened and the contents allowed to drain off. I am speaking of this condition only to have it understood that its confusion with the other two to be spoken of directly is a serious error. This condition is saprophytic entirely.

Its treatment consists in having the uterus well drained by keeping it open and administering such drugs as will contract the uterus. Among the few at our disposal I prefer the fluidextract of cotton root to any other. It is less likely to contract the circular fibers of the cervix than ergot. Strychnine should be kept for later uses when the indication for a stimulant becomes apparent.

It is sometimes combined with bacteremic infections, and is then a very serious condition.

The *second form* I wish to discuss, means a true infection with

one or more of the usual pathogenic germs investing septic wounds anywhere. It is at all times a serious complication, and should not be spoken of lightly. Its gravity depends on the character of the infection, the resistance the patient offers to the poison, and the earliness in which rational treatment is instituted. The symptoms may come on early, usually on the second day, though more commonly on the third or fourth day.

I have seen a case lately where the initial chill came on twelve hours after delivery.

A careful inspection will often tell us where the infection is located. We cannot always elicit sensitiveness of the uterus directly after the initial chill. This does not come on until after twenty-four hours and until the inflammation has reached the deeper layers of the uterus. It is at the time or before this sensitiveness that the treatment I beg to presented to your kind consideration should be instituted.

Unfortunately the method has been much discredited by those who have waited for days and then expected the impossible. I offer the same argument that I would for early operation for acute appendicitis or any other septic process.

As I look at it the first indication for a septic infection of a wound, whether that be situated within the uterus or elsewhere is the removal of all material that will act as a culture medium. This has long ago been taught by all teachers of obstetrics. To do this the extensive and harmful use of the curet in the uterus has been considered proper in the years passed.

We have all come to the conclusion that a gentle and harmless removal of all adherent blood clots—membranes—bits of placenta, etc., by instrumental aid is impossible.

The next step to suggest itself is what means have we at hand to change these bits of tissue from a rich culture medium to harmless bits of animal matter. The system has a better show to throw off what has gotten into it if we can prevent further encroachment. If our theory of phagocytosis is correct the less the phagocytes have to do the better.

Frequent irrigation of the uterine cavity with antiseptic solutions are not only an annoyance to the patient, but the penetrating power of any antiseptic, save one, is very slight. I say save one, for the medium used must not be poisonous and effect the normal tissue but slightly. This one is alcohol.

A bit of dead tissue placed into a dilute solution of alcohol becomes dehydrated to such an extent that it no longer serves as

a culture medium for bacteria. If we agree on the effectiveness of alcohol as a dehydrating agent, how can we introduce it into the uterus with the least possible disturbance to the patient? How can we bathe the parts continually in it? Can we do it gently, and can we make it penetrate into the crevices?

The first condition is secured by leaving a tube in the uterus and keeping it in such a position that it will not annoy the patient. When we have succeeded with this we shall also have succeeded in mastering the second condition; namely, gentleness of introduction of the solution of such strength as will not irritate the part it comes in contact with.

The penetration of the agent at hand into every crevice of the uterus is secured by separating the two surfaces of the organ by a layer of gauze. My good friend Dr. Wetherill of Denver, Colo., has succeeded admirably with a tube doubly bent on itself. This ought to be an especially good method in the earlier months of pregnancy.

The objection, as I look at it, is the possibility of pressure by the tube and the imperfect manner in which the two surfaces are separated. Dr. Wetherill, however, reports admirable results.

The technic I wish to present to your consideration I have used for thirteen years and with many good results. Neither have I seen alcohol poisoning, nor other accidents.

I would beg of you to use it early in the disease and not wait for days when the tissues have become deeply involved and the patient unable to throw off the poison. It has been my experience that changes made from the method as described hereafter will generally result in failure.

The patient should be placed squarely on a table with the feet elevated and fixed with stirrups. The vulva should now be shaved and scrubbed, if this has not already been done. An anesthetic is rarely necessary except in nervous individuals. The vulva and vagina are thoroughly irrigated with a normal salt solution or sterile water. When these are not at hand a solution of bichloride 1/5000 may be used. A speculum is now introduced into the vagina and the cervix exposed. The anterior lip of the cervix is caught up (still under the flushing) with an American bullet forceps.

If a sample for culture or smear is desired now is the time for that purpose.

The uterus is now irrigated most gently until the fluid comes

away colorless. The rubber tube I now show you is next introduced to the fundus uteri, and then slightly withdrawn, so that the end of the tube will not press against the mucous membrane.

The tube is fashioned after the ordinary stomach-tube, but its size is a number 24 French, and the total length is 3 feet. Eight inches from the tip end is a white ring. This is the average length from the fundus to the vulva at about from the third to the sixth day.

When the tube is in place this white ring shows at or just without the vulva, but is always in sight. So long as this white ring is in sight the doctor or nurse knows that it has not slipped neither one way or the other. Five inches from the tip end a string is fastened by two half hitches which effectually prevents slipping and serves to hold the tube to the gauze. This secures the tube in place. There is one opening at the tip end of the tube and two eyes half an inch from the tip. A rubber funnel is supplied for the other end.

The tube having been introduced as described, the funnel is placed on the abdomen and the left hand holds both tube and the bullet forceps, thus steadying the uterus. A narrow strip of soft gauze, iodoform if you please, 5 yards long and 1 1/2 inches wide is pushed with a Bozman dressing forceps up into the right horn, and then with another grasp some is placed into the left horn. The rest of the uterus is slightly packed. A uterine packer is often of service, and may be used instead.

The tube is now firmly tied to the gauze by the string already described and the vagina filled loosely with the rest of the gauze. Any traction inadvertently made on the tube now would displace the gauze below the string, which is quite impossible unless great force is used.

The funnel is raised to the full length of the tube, and 60 c. c. of a warm 25 per cent. solution of grain alcohol is poured in. This penetrates the gauze all over and the superfluous quantity flows over the perineum. This at first occasions a little burning. Once the treatment had to be abandoned because of this burning pain. It happened to be a case of Cesarean section.

The funnel is now placed on the patient's abdomen wrapped in a sterile or at least a clean towel. The vulvar pad catches up all of the drain. Dilute alcohol to the quantity of 60 c. c. is poured into the funnel every two hours without in the slightest

disturbing the patient. It can be done without disturbing her sleep.

When the temperature has reached 101° F. the irrigation is continued but once in three or four hours, and when the temperature has been below 101° for twenty-four hours all is removed.

The tube and gauze may remain in place for five or six days, and when removed should be almost as clean as when first applied.

I have no suggestion to make as to general treatment. Indications will have to be met. Good wholesome liquid food in abundant quantities, and little medicine should be thought of.

Both urination and defecation should not be disturbed by the tube.

The advantage besides its simplicity and effectiveness is that any ordinary nurse can be instructed with its care. When hospitals are not at hand this is an important consideration.

The *third form* which I will only touch upon since my time has almost expired is where the infection starts at the cervical canal in some small fissure. These cases occur more frequently in the earlier months of pregnancy.

An inspection shows a diphtheroid deposit at the cervix which when removed rapidly returns. Commonly it is a colon bacillus, and a late infection. Lymphangitis and phlebitis followed by destructive action in the pelvic cellular tissue are observed. When gotten at early the vagina and cervix should be thoroughly flushed after exposure through a specula.

A solution of bichloride 1-5,000 is always handy; the parts are now wiped dry, and through a soft-rubber catheter and a syringe a 10 per cent. mixture of iodoform and glycerine is poured into the cervical canal. The liquid is kept in place by an iodoform gauze tampon.

All is removed in forty-eight hours, to be renewed if the condition warrants it. The removal can be done in bed, as further douching is not called for, and the renewal of the application made.

I have purposely not touched on the extensive operative measures advised for sepsis, such as excision of the veins that I might not produce confusion in your mind, and that I might strictly adhere to the subject which I wished to present for your consideration. Neither have I touched upon the use of vaccines. That chapter has just been opened and the results thus far doubtful.

THE ABSTRACTION OF CALCIUM SALTS FROM THE
MOTHER'S BLOOD BY THE FETUS THE CAUSE
OF PUERPERAL ECLAMPSIA IN THE FORMER.

BY

JENNIE G. DRENNAN, M. D., C. M.

Arrochar, Staten Island, N. Y.

IN an article, "The Abstraction of Calcium Salts from the Mother by the Fetus the Cause of Fatty Infiltration of the Liver Cells of the Former," *New York Medical Journal*, March 12, 1910, I hinted at this abstraction being indirectly the cause of puerperal eclampsia and other serious toxic complications of pregnancy; for example the pernicious vomiting of pregnancy. As so many theories have been advanced as to the cause of eclampsia, one feels as if surely she should have the temerity to advance still another and add to the long list, thereby hoping to aid in the search for the true cause of this terrible condition. That eclampsia is a culmination of toxemia is, I think, the idea of every one at the present time; but what is the cause of this toxemia is the question to be settled. The majority attribute it to the formation of toxic substances either by the maternal or fetal tissues and the failure on the part of the former organism to excrete these toxins because her excretory organs are in a pathological condition, due to some pre-existing cause or due to the pressure from the presence of the enlarged uterus. The organs most affected in the subjects of puerperal eclampsia are the liver and kidneys, especially the former, and it is to a study of the pathological histology of this organ that attention must be chiefly directed. In the subjects of this disorder we find marked fatty degeneration of the liver cells. It is generally believed that a certain amount of fatty infiltration of the liver cells around the hepatic veins—the central zone of the lobule—is a physiological condition during pregnancy and lactation. With this view I disagree and consider that this fatty infiltration is a pathological state due to the abstraction of calcium salts from the mother's blood by the fetus in such quantity as to deprive the mother of what should rightfully be hers to unite with the fatty matter in her liver cells to form lipoids—soluble fats—which would then be conveyed by her circulation to be deposited in tissues normally the depôts of free fat and also as a source of fat to the fetus. The calcium

being freed from such soluble fats would then be free for recombination with fatty substances—calcium being really a fat carrier. The liver cells have altogether too important a function or functions to perform in the metabolism of the body for such a number of them to be disabled by being infiltrated by free fat. No fat-infiltrated cell can be a normally functioning one. My theory is that calcium salts being abstracted by the fetus, free fat accumulates in the organs—the softening of osseous tissue during pregnancy—causes the fatty infiltration of the liver cells. This fatty infiltration prevents the proper functioning of these cells—the disposal of protein digestion—toxic substances circulate in the blood and poison the patient's tissues, one of the effects being a fatty degeneration of the liver cells. Now two terms have been used, fatty infiltration and fatty degeneration, and I have not used them interchangeably (by any means), but intend that each shall be understood to have its own distinct meaning. By fatty infiltration I mean the presence in the cell of droplets of fat the normal result of cell metabolism, but which on account of the abstraction of the calcium salts is not formed into lipid material and carried away but remains as free fat in the cell. It does not take the place of the cell protoplasm but pushes the latter with its nucleus to the periphery of the cell, and thus by its presence mechanically interferes with the function of the cell. Now the cell being unable on account of this mechanical impediment to functionate, protein metabolism is interfered with, toxic substances result and produce fatty degeneration of the liver cells; by this I mean that the normal protoplasm and nucleus of the cell are converted into fat. In fatty infiltration a cell may recover itself, but in fatty degeneration it cannot. A new cell must here be formed and this can only occur if cells capable of reproducing themselves are present. Now if fatty infiltration proceeds to any great extent, excessive amounts of toxic substances will be formed and great fatty degeneration will result with almost complete loss of liver function and excessive toxemia resulting in eclampsia or similar conditions—pernicious vomiting.

As an objection to my theory might be brought forward the fact that it is during the early months of pregnancy that morning sickness—a condition considered, when kept within bounds, to be physiological of pregnancy—is present, and that if vomiting is due to abstraction of calcium salts it should be more severe during the later months, when the needs of the fetus for calcium

are much greater. In support of my view I would say that the maternal organism having become accustomed to the new order of things—pregnancy—the mother's appetite improves and she partakes of an increased amount of food containing calcium salts (I am here referring to a normal pregnant woman), and is able to provide calcium for herself and fetus. Then, moreover, if one believes in the theory of immunity one can conceive of her organism forming a sufficient amount of antibodies to render inert any excess of toxic material. The ability to do so increases with the length of exposure to toxic substances. This immunity, however, would only be effective where the abstraction of calcium salts is not so excessive as to effect great areas of liver cells. That the physiological vomiting of pregnancy is more pronounced in the morning before food has been taken might be accounted for in this way; no food having been eaten for some hours, the amount of calcium salts is low in the maternal organism and her liver cells are drained to meet the demands of the fetus, more toxic substances are formed, but on partaking of food the demand is satisfied on the part of the maternal and fetal organisms and the food may also have a neutralizing effect on the toxins, and fresh antibodies may be formed. Poisons always act more severely in the absence of food, being probably taken by the cell in the absence of its normal nutriment, just as the prodigal son ate corn husks when he could not get anything better.

All autopsy findings in eclampsia show that the liver cells suffer more than those of the kidneys.

The heretofore great sheet anchor in the treatment of the convulsions of puerperal eclampsia has been inhalations of chloroform. but this has been abandoned by those who have studied the effects on the liver cells of prolonged chloroform anesthesia. By experimental pathology it has been proved that chloroform induces fatty degeneration of the liver cells, the very condition of all others which we should attempt to prevent in eclampsia as it is one of the pathological findings in this condition, thereby only adding fuel to the fire and further crippling crippled cells.

SUMMARY.

1. The abstraction of calcium salts from the mother by the fetus causes fatty infiltration of the liver cells of the former.
2. This fatty infiltration causes disturbed liver function with the production of toxins from imperfect protein digestion.

3. Circulation of toxins causes fatty degeneration of liver cells thereby increases the inability of the liver to functionate with resulting increased toxemia.

4. No chloroform should be administered as it produces fatty degeneration of liver cells.

5. The prevention and treatment of this condition consists in a liberal calcium diet, lessened protein food, and if the patient is not seen until labor has commenced rapid delivery to rid her of the fetus which is draining her of her calcium salts. The hemorrhage attendant upon delivery—and in these cases it is sometimes excessive, owing no doubt to lack of calcium salts in her blood—will rid her organism of much toxic substances and have a curative effect.

WADSWORTH HALL.

THIRTY-TWO-POUND OVARIAN CYST FOLLOWING TUBAL PREGNANCY.*

BY

A. LAPHORN SMITH, M. D.,

Surgeon-in-chief of the Samaritan Hospital for Women; Gynecologist to the Western General Hospital and to the Montreal Dispensary; Fellow of the American Gynecological Society, etc., Montreal, Canada.

Mrs. M., age thirty-two, was sent to me by Dr. Wattier for an ovarian tumor. She was born in England and began to menstruate at sixteen and continued to do so normally. She was married at twenty-three and had three children, the last one six years ago. She had a miscarriage nine years ago, soon after her marriage. Her labors were natural except the first one which was terminated with instruments. Two years ago, after having been sterile for five years, she became pregnant for the fifth time. One day, when two months' pregnant, she was suddenly taken with severe pains in the lower abdomen, which she thought was a miscarriage coming on. She soon became unconscious and remained so for many hours, during which Dr. Perigard was called in, and diagnosed the case as one of tubal pregnancy, and called Dr. England who sent her to the Western Hospital and operated on her at once. He removed the right ovary and tube and a great quantity of blood clots, but did nothing to the left ovary and tube. She made a good recovery from the operation, but never felt well, and almost immediately she began to get large. By the first of June, 1910, the swelling was quite noticeable, and on the first of January, 1911, Dr. Wattier was consulted,

* Read before the Medico-Chirurgical Society of Montreal, Feb. 17, 1911.

and advised her to have it removed. She was very reluctant to undergo a second laparotomy, and it required much persuasion to get her to come to me on the twelfth of January, 1911. The tumor filled the whole abdomen and was distinctly fluctuating, so that there was no doubt about Dr. Wattier's diagnosis. On the twentieth of January I removed a large multilocular cyst of the left ovary, which with its liquid contents weighed thirty-two pounds. Although there were many wide and dense adhesions requiring ligature, she made a good recovery and went home on the fourteenth of February. Tumors of this size are becoming very rare, and we have to thank conservative gynecology that she had any tumor at all. It could not have happened to any of my first thirty cases of tubal pregnancy, for I removed the other ovary in every one of them. But in the last twenty-four cases I left the other ovary, with the result that I have already had to operate a second time on several of them for a second tubal pregnancy or for disease of the ovary or tube, and have no doubt that many others will likewise have to undergo a second abdominal section, as did these cases.

238 BISHOP STREET, MONTREAL.

TRANSACTIONS OF THE SOCIETY OF THE ALUMNI OF THE SLOANE MATERNITY HOSPITAL.

Meeting of January 27, 1911.

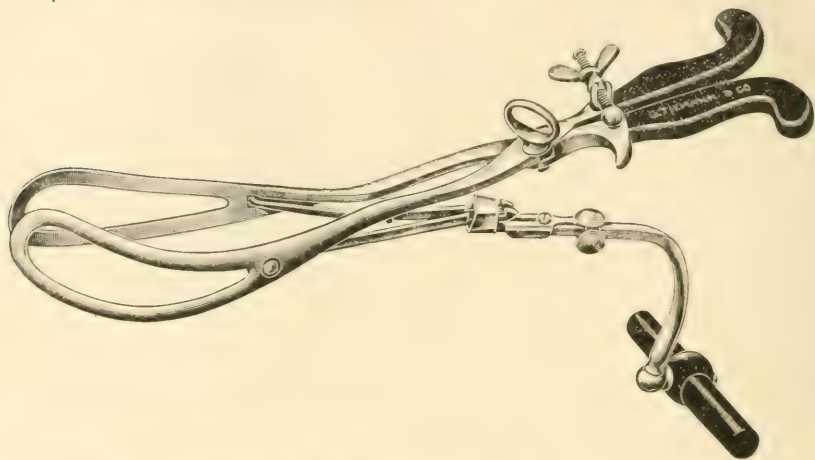
The President, GEO. H. RYDER, M. D., in the Chair.

DR. C. B. KNAPP demonstrated a pair of

AXIS TRACTION FORCEPS.

which he considered preferable to the model employed at the Sloane. In using the latter he had had some difficulty while doing a high forceps operation after the head was brought down into the midpelvis and was tightly held in this position. Under these circumstances it was difficult to complete the extraction with the ordinary handles. In the model presented by Dr. Knapp, the handles were modified as shown in the illustration so that traction could be continued after the head had been brought into the pelvis and the axis traction was no longer needed. In the ordinary model there is frequently difficulty in attaching the axis traction handle, as the point of attachment

may be some distance within the vulva, especially where the head is high. In order to overcome this the shank on the present instrument was lengthened half an inch so that in attaching the axis traction handle the manipulations could be carried on entirely outside of the vulva.



DR. W. M. HARTSHORN reported a case of

QUININE POISONING DURING THE PUERPERIUM

of which the leading features were as follows: The patient was a primipara of Swedish birth, twenty-two years of age and admitted to the Nursery and Child's Hospital in August, 1910. She was well nourished and the personal and family histories were negative. Three years previously she had contracted a cold and was given 4 grains of quinine after which, as was afterward learned, she suffered from slight cinchonism. This was repeated in a subsequent attack, but from neither did she suffer anything except slight discomfort. The patient went through a normal labor with a slight postpartum hemorrhage. Eleven days after delivery she was given two compound ergotine pills for the purpose of hastening involution. Each of these contained

Ergotine	gr. $1\frac{1}{2}$
Tincture digitalis	℥. $\frac{1}{2}$
Quinine sulphate	gr. $\frac{1}{2}$

The next morning the patient's temperature rose to 102.6° F., although there was nothing complained of except a slight burning sensation in the face, and after free catharsis the temperature fell to 100° F. and rose again to 101.6° F. During this time her face had become greatly swollen, her eyes being nearly closed, and the entire body covered by a scarlatiniform erythema accompanied by severe irritation. There was no gastric discomfort and no diarrhea and no complaint of eye or ear symptoms.

Up to this time the ergot pills had been continued, the only other medication consisting of rhubarb and soda mixture, citrate of magnesium as needed, and a soothing ointment. The patient gave every indication of having a severe attack of scarlatina, although no throat or kidney symptoms were present. A drug toxemia was suspected, which diagnosis seemed to be corroborated by her past history regarding quinine. Upon discontinuing the ergotin pills the temperature dropped from 103.6° F. to 100° F. but rose again the next afternoon to 103° F., after which it fell to 99° F. that night and remained normal afterward. During the first three days after defervescence there was a very extensive desquamation of the epidermis involving the entire body.

DISCUSSION

DR. FIELDER inquired as to the differential diagnosis between Dr. Hartshorn's case and a case of scarlatina

DR. HARTSHORN replied that there were no symptoms which would lead to the diagnosis of any of the exanthemata; there was nothing in the throat and no gastric disturbance, and finally no other cases developed among those exposed. The desquamation was in the form of large epithelial scales and began within two days after the temperature fell to normal.

DR. GEO. W. KOSMAK presented a

"REPORT ON FOUR CASES OF ECLAMPSIA, WITH REMARKS ON THEIR TREATMENT."¹

DISCUSSION.

DR. E. M. COLIE inquired whether chloral would not be contraindicated in puerperal eclampsia for the same reasons that chloroform was objected to by the reader of the paper. There were many who regarded very unfavorably the use of chloroform in eclampsia, but who at the same time used large quantities of chloral. As the chlorine radical was present in both substances, Dr. Colie inquired whether it was the chlorine or some other group in the molecule which was to be held responsible for the action upon the liver.

DR. F. A. DORMAN asked whether a true vaginal Cesarean operation was done in these cases, including the separation of the bladder. He thought that immediate repair of the uterine and cervical incision was an exceedingly vital operation in these patients. If a wound in the cervix was allowed to heal up by granulation, a woman would be left in a dangerous condition if she ever came to term again, and in cases where the secondary operation is done, he thought it questionable whether as good a union could be obtained as with an accurate primary suture.

DR. O. P. HUMPHSTONE in referring to the difficulty which the speaker had in bringing down the uterus in this operation,

¹ See original article, page 633.

stated that he had had no trouble whatever in doing this after the organ was once emptied. He thought it essential that thorough lateral separation of the bladder from the vagina be secured. Dr. Humpstone also stated that he would personally like to condemn hot packs because they took the fluids out of the body without removing the poison, for he believed that the elimination from the skin was not very great and that more attention should be given to elimination by means of the bowels and kidneys. It had been his custom to extract the placenta at once after doing a vaginal Cesarean section for eclampsia, making no effort to control the bleeding, for he thought that the more these patients bled within reason the better for their condition, and he was convinced that this *local* bleeding was of benefit. Dr. Humpstone also claimed that packing the uterus was to be avoided if possible, for in one of his own cases where packing had been done, the convulsions which subsequently occurred were stopped as soon as the packing was removed. He also believed that there was no indication for doing an abdominal operation in this accident of pregnancy.

DR. A. E. GALLANT, referring to the use of nitroglycerin, said that in former years one would have been very loath to give more than one fiftieth of a grain every two hours, but it had been his own custom to use this drug more liberally, depending on the indications presented by the individual case. He also referred to the fact that recent x-ray examinations of the rectum and colon with the rectal tube in place, showed that it was practically impossible to insert a long tube up into the colon, but that the latter usually remained coiled up in the rectum or in the lower portion of the sigmoid. For that reason he doubted whether any of the irrigating fluid ever found its way high up into the colon unless the patient were placed in the right lateral posture.

DR. E. B. CRAGIN, in referring to the point made by Dr. Humpstone regarding the local bleeding of a patient with eclampsia, said that he did not quite agree with the latter as to the value of hemorrhage. In a series of eclamptic cases at the Sloane Hospital for Women, in which venesection and subsequent infusion was done it seemed to him that the vitality of the patients was much reduced and consequently their resistance to the poison, although he believed that a moderate amount of bleeding from the parturient canal did no harm in certain cases and perhaps a little good. But beyond this there was a limit which it was not safe to overstep and Dr. Cragin preferred to lower the pulse tension with veratrum and nitroglycerin rather than obtain this effect from any considerable bleeding. A number of cases in which he had done venesection and then infusion, resulted fatally, and it seemed to him that a larger proportion would have been saved if their vitality and resistance had been conserved. As regards the hot pack, Dr. Cragin believed that good results could be obtained from its use,

although no response might be secured at first, even in the initial twenty-four hours. Judging from the odor of the perspiration in some of these cases it seemed to him that a considerable amount of toxic material must be eliminated through this agency. He preferred to make use of all the avenues of elimination, including the skin, kidneys and intestines, and, as thorough elimination is so assential, we should be thankful for even the small amount that may take place through the medium of the skin.

DR. KOSMAK in closing the discussion referred to a similar series of cases reported by Dr. Humpstone to this Society two years ago. Although he had done a number of vaginal Cesarean sections at that time, Dr. Kosmak was not impressed with the ease of the procedure but determined to submit the matter to a further personal trial. During the past year while on service at various times at the Lying-in Hospital, the four cases of eclampsia came under his care which are herewith reported.

In answer to Dr. Colie's question about chloroform, he said that in the presence of eclampsia in a hospital or anywhere else chloroform was not usually given with due deliberation. Very often it has to be given by the nurse and a great deal more poured on the mask than the patient can ordinarily take with safety. During the seizures, moreover, no inhalation of the drug can take place. Chloroform also interferes with proper respiration and in that way with proper elimination from the lungs. Chloroform was therefore always given in a minimum degree, although not entirely abandoned at the Lying-in Hospital, but for any operative procedures ether was preferred.

In reply to Dr. Dorman's question about the extent of the operation performed, Dr. Kosmak stated that he did the classical operation as described by Dührssen, the incision being made in the anterior vaginal fornix and the bladder stripped back with the finger in each case as far upward and to the sides as possible. This therefore did not interfere with the pulling down of the uterus when it became necessary to introduce the sutures. In the third case, a multipara, there was a marked rectocele and cystocele. In this case there was some difficulty experienced in separating the bladder, as there was a great deal of scar tissue in and around the cervix from previous lacerations.

This did not stretch to any extent and without an incision in the cervix, irregular and extensive lacerations would have resulted. Dr. Kosmak did not agree with Dr. Dorman as to the necessity of an immediate repair of these cervical incisions. In such cases the cervix was very much hypertrophied from edema and it was very difficult to approximate the edges correctly. In one of these cases and in previous ones, where a secondary repair was done, the result was so good that it was almost impossible to find the line of union. Guide sutures were inserted in one instance in the present series, but started to pull out of the cervix and were of little service.

Regarding the value of free bleeding in these cases, the speaker desired to express a denial of this fact. He was more inclined to agree with Dr. Cragin that most of these patients need all the blood they can possibly retain and there was no advantage in allowing them to bleed unnecessarily. In a large plethoric woman some bleeding may be allowed, but in the average case recovery is always delayed by a severe hemorrhage. Plain gauze was usually employed for packing the uterus, but in the cases where the iodoform packing had been used no toxic effects were observed. Although abdominal Cesarean section was mentioned in the treatment, there were no indications for doing it in any of the cases presented, but a patient near term with a true conjugate diameter of a little less than 10 cm. and very rigid soft parts would serve as an indication for the abdominal operation, for it could be done as quickly and with very little greater loss of blood or shock than a vaginal Cesarean, where there would be an uncertainty present in being compelled to deliver a large child through a small pelvis and rigid soft parts. As regards the use of nitroglycerin good results were obtained with the spiritus glonoin, in doses of 1, 2, or even 3 drops every twenty minutes. The guide in the administration was the degree of pulse tension. Chloral was used not only as a sedative, but because of its known vasodilator action and it could be given with advantage for several days after delivery where the vascular tension persisted.

In speaking of the colon irrigations, the high variety was not referred to. The water was simply used to flush out the lower bowel and the good effect was due not only to absorption of the fluid, but because peristalsis would be excited higher up, resulting in an evacuation of the bowels by natural means. The hot packs had always given good results, although the effects might not be noted immediately, as in one of these cases the patient failed to perspire until some four hours after the treatment was started.

The paper of the evening was read by Dr. EDWARD J. ILL, of Newark, N. J. (by invitation), entitled.

"THE TREATMENT OF ACUTE PUERPERAL SEPSIS."¹

DR. E. B. CRAGIN, in opening the discussion on Dr. Ill's paper, referred to the value of being addressed at these meetings by men who had not obtained their knowledge of obstetrics from the Sloane Hospital for Women, as in this way the views of the members would undoubtedly be broadened. Dr. Cragin agreed with the speaker in the necessity of taking every possible precaution in obstetrical work and that no man should say that he did not need to wear rubber gloves, that his hands would be clean enough because he did nothing but clean work. No one could afford to neglect any of the recognized precautions.

¹ See original article, page 644.

Notwithstanding all these precautions a certain amount of puerperal infection was likely to be the lot of every one, but after all recognised precautions were taken in every case, professional support would not be lacking.

Dr. Cragin acknowledged the good results which Dr. Ill had obtained with the method of treatment described by him in his paper, but he himself had not been so successful in its use and had therefore abandoned it. There were several things which he would like to have Dr. Ill to explain to him. In the first place he had found that the drainage gauze was not as free from odor or as clean at the end of three or four days as Dr. Ill had found it, nor did the gauze seem to drain as freely as stated. On the contrary it impressed Dr. Cragin as acting sometimes as a barrier to drainage from the uterus. In fact he thought that a uterus would be cleaner and more freely drained without having the gauze and the tube inserted according to Dr. Ill's method, and the question arose in his mind whether Dr. Ill would not have had equally good results if the uterus had been gently cleansed and the gauze and tube omitted. It seemed to him that those women did best in whom the least had been done for the treatment of this condition after emptying the uterus, that is, where the powers of resistance were increased and the vitality, both local and general, was not reduced.

Although he acknowledged that the method described had been used with great success by Dr. Ill, he merely wondered whether others would be able to get as good results as Dr. Ill obtained, and whether those who had not the proper experience with the method would not be just as well off if they explored the uterus carefully with the gloved finger and, if it was not empty, proceeded to render it so and then left the uterus severely alone.

DR. G. L. BRODHEAD, in referring to the frequency of the condition, claimed that it was well known that the mortality from puerperal sepsis in hospital work was gradually decreasing, whereas both the morbidity and mortality in general practice unfortunately was not much better than it was many years ago. In cities like New York with a large foreign population, midwives were a necessity and would remain a permanent institution. The ignorance of midwives was probably largely responsible for many cases of sepsis, but if midwives were to be permitted to practise, then it was necessary that these women should be properly instructed in aseptic methods. Dr. Brodhead stated that he had heard of a plan to have regular instruction given to midwives at the Bellevue and Allied Hospitals, and this seemed to him to be a step in the right direction. The ignorance of midwives however was merely one factor in the prevalence of puerperal sepsis, the carelessness of physicians being another far more important.

Dr. Brodhead thought that Dr. Ill's remarks about the advantages to be derived from rubber gloves were very opportune, but

gloves also must be kept sterile. He had, for example, seen a physician take out a pair of rubber gloves, put on the right one very carefully and then adjust the fingers of the glove with the fingers of the bare left hand. Physicians at times forget that gloves must not come into contact with the blankets and limbs of the patients. Referring to the frequency of puerperal sepsis, Dr. Brodhead stated that he had recently looked over the statistics of the maternity service in the Post-graduate Hospital, and in a series of 4,900 cases, he had found seventeen cases of sepsis, an average of 1-300. Of these cases, six had died, giving a mortality of 1-800. Protracted labor was not the only condition which rendered patients susceptible to sepsis, for in only one of these six fatal cases was the labor difficult. Curiously enough, among this number there were four instances of persistent occiputposterior position, which, however, must be regarded merely as a coincidence, because in three of the four forceps operations were easily done and in only one was delivery accomplished with any difficulty. As the labors were practically normal in all but one case, it seems probable that infection must have been introduced from without and that the susceptibility of the patient was not a factor.

The speaker also stated that since the first of January five cases of sepsis had been admitted to his service at the Gouverneur Hospital, which was sufficient evidence of the prevalence of sepsis. One of these proved to be a streptococcus bacteremia and resulted fatally in spite of the use of streptococcus serum given intravenously. Dr. Brodhead believed that a great deal of stress should be laid on the importance of infrequent vaginal examinations during labor and in many cases one could conduct the labor without internal examinations. The vast majority of women are delivered normally, and where the indication arises for operative interference, such as a forceps delivery, the examination can in many cases be deferred until that time.

DR. BRODHEAD said that he had never used alcohol in the manner suggested by Dr. Ill, but that he would certainly make a trial of this procedure. In the emergency service at Bellevue, Dr. Austin Flint made frequent use of uterine douches of 50 per cent. alcohol. The uterus was first emptied, and then if the temperature did not come down, the cavity of the uterus was douched with normal salt solution followed by two quarts of 50 per cent. alcohol the douche being repeated once or twice at intervals of from twelve to twenty-four hours, depending on the progress of the case. In his service at the Gouverneur Hospital, the uterus was emptied and cultures taken from the uterus and the blood. If the infection proved to be due to a streptococcus, the Board of Health serum was employed. Dr. Park had stated that in a very short time he hoped to have several physicians appointed to go about the city taking cultures and smears in every case of this kind where a practitioner desired it. If the culture showed

staphylococcus and colon bacillus, Dr. Brodhead used a combined vaccine made by Parke, Davis & Co., of which $1/2$ to 1 c.c. was given hypodermically as an initial dose, and the subsequent dosage was given according to indications.

DR. S. M. BRICKNER desired to express his agreement with Dr. Cragin in the latter's statement that the less done to the injured and septic uterus the better for the patient. At Mt. Sinai Hospital all the various methods of treatment had been tried which were advocated from time to time, including the use of alcohol, but it must be confessed, not in the manner which Dr. Ill referred to. In his (Dr. Brickner's) cases, the uterus was drawn down gently and packed with gauze soaked in 50 per cent. alcohol, repeated two or three times during the course of the day. As he had not had any experience with the method advocated by Dr. Ill, Dr. Brickner did not feel competent to criticise or condemn or praise it, but he desired to state that it seemed to him that Dr. Ill's cases were probably seen much earlier in the disease than those which were usually admitted to the large New York hospitals. These patients might be eight or ten or twenty days postpartum, or, as in a recent case at Mt. Sinai, the patient was admitted four weeks after labor. In most instances these patients seek the hospital because their financial resources have become exhausted and Dr. Brickner desired to emphasize this in connection with another statement which had been made by Dr. Brodhead, with reference to the training of midwives. An investigation at Mt. Sinai Hospital showed that about 87 per cent. of their cases were attended by physicians and not by midwives and it was therefore the physicians who needed the education and the training until they had learned the one great lesson of obstetric procedure and that was "cleanliness."

The speaker thought there did not seem to be any criteria offered by Dr. Ill as to diagnosis in the cases where the alcohol treatment had been used, and it apparently did not make any difference whether there were remnants of tissue left in the uterus or whether there was an acute metritis, pelvic peritonitis, parametritis, or pelvic phlebitis—the latter a condition which almost always defined accurate diagnosis. He desired to ask Dr. Ill whether, in the subacute cases which may have been proceeding ten or twelve days before he saw them, the alcohol treatment was also used, or whether it was only employed in those cases where the onset was sudden and which came under observation at an early period. It seemed to him that this question was a very important one. In explanation, Dr. Brickner recited the history of a case which had been admitted to his service at Mt. Sinai somewhat over a year ago. On a Saturday morning this woman had had a criminal abortion done by a doctor in Brooklyn. On Saturday night she had a chill and at 4 o'clock Sunday morning she was admitted to the hospital. At 5 o'clock she was seen by Dr. Brickner, within twenty-four hours after the abortion. The uterus was found to be filled with a mass of

putrid material, which was cleaned out as well as possible with the finger and the cavity packed with alcohol gauze. That same afternoon at 4 o'clock the woman died. In a case of this kind where the infection was very virulent, no treatment it seemed to him could be of the slightest avail. Dr. Brickner also referred to the fact that we were prone to speak of puerperal sepsis or puerperal infection as an entity and he had striven for some years in a very humble way to attempt to clear the professional mind of the fact, namely that this disease is not an entity and that we should speak of the precise condition which prevails. The term "puerperal infection" or "puerperal sepsis" should only be used in a secondary manner; for example, if the woman has a secondary malignant endocarditis it would be a manifest absurdity to speak of that as puerperal sepsis. In referring to the various manifestations of the disease we should seek to make as far as possible a differential or particular diagnosis of the precise condition.

Dr. J. O. POLAK congratulated Dr. Ill on being able to educate his clients among the physicians to send these cases of puerperal infection to him at a time when the treatment referred to would be of avail. He thought that the good results obtained by Dr. Ill were due to the fact that his cases were obtained early, when the infection was confined to the uterus either as a putrid or septic endometritis. Dr. Polak referring to the last 100 cases in his reported series, stated that sixty-seven had been curetted one or more times before admission to the hospital. Out of this number every single one had developed a parametritic exudate, which showed that nature at least had made an effort to defend herself against the infection, which each particular man had made with his curet in the dissemination of the septic process. The speaker believed that there were two points to be considered in this condition, the first, trauma, and the second, infection. The woman without trauma had an individual resistance that as a rule was considerable, while the woman who had sustained severe injuries offered little tissue resistance. Whether the patient would resist the infection or not depended entirely on the variety of the same. A large number of cases with putrid or septic endometritis would recover, but where there was trauma produced by the forceps or other operative procedures, and infection with the streptococcus resulted, trouble would follow.

Dr. Polak was thoroughly in accord with the statement made by Dr. Brickner that the midwife was less harmful than the physician, from the fact that she was afraid to interfere in the course of labor and so injuries were less frequent. In his treatment of these cases the speaker always attempted to make a differential diagnosis in each instance and by adopting a definite routine procedure it was possible to place the patient in such a position that the toxemia could be combated by increasing the patient's resistance. The prophylactic measures referred to could not be too forcibly impressed, likewise the necessity of exploring the

cervix and the cavity of the uterus. Although nothing had been said about the value of posture, he was more than satisfied with the results obtained from this procedure in the retention cases where a blood-clot served as the focus for the subsequent infection. The position referred to was that described by the late Dr. Fowler of Brooklyn. He had repeatedly observed in patients an immediate subsidence of temperature as soon as they were placed in the Fowler position.

Some ten years ago, Dr. Polak had used the treatment advocated by Dr. Ill in about sixty cases, but the results in these were not any better than where the uterus was merely explored with the gloved finger and emptied by this means, without subsequently repeating the procedure. This method of treatment was followed at the present time except that gauze saturated with tincture of iodine is introduced and left in place for thirty minutes. Regarding the use of vaccines in the treatment of puerperal sepsis, Dr. Polak stated that for the past two years they had been employed in his hospital service under the guidance of the pathologist and the opportunity was afforded of observing the cases from day to day. As the result of these complete observations they had gotten together some very valuable data. In the colon bacillus and staphylococcus infections, he did not know of anything that would increase the resistance of the individual as much as immunization by gradually increasing doses of vaccines. In the streptococcus infections the bacteria in many of these cases were present in such overwhelming numbers that vaccines would not have any effect. In order to protect these patients, a large number of antibodies would have to be produced in the blood and vaccines could not accomplish this unless the patients had been immunized before they were confined. Consequently in the acute streptococcus infections it was necessary to inject large quantities of antistreptococcus serum, saline or collargol solutions, which would thus give rise to a temporary phagocytic resistance and afford the phagocytic processes an opportunity to overcome the bacteria in the blood. Dr. Polak believed therefore that the vaccine treatment should be confined to the staphylococcus and colon bacillus infections. In the streptococcus infections, one would probably be disappointed by the results from this treatment.

DR. F. A. DORMAN referred to one point in the prophylaxis of puerperal sepsis which was not sufficiently touched upon and that is the advice given to patients as to the manner of protecting themselves against this complication. In explanation of this remark he quoted a case of a young and healthy primipara, who was delivered at the Sloane after a very quick labor. Four or five days later she developed an exceedingly active septic condition which in spite of treatment resulted in a pelvic cellulitis and abscess. It was necessary to incise and drain this abscess per vaginam and the patient underwent a very protracted convalescence. For a long time it was impossible to determine how this woman became infected as there was not even time to have made

a vaginal examination. The patient finally told the doctor that in her preparation for the labor she had taken down her old douche bag and given herself a thorough douching before going to the hospital. During all this time she was in active labor. The question arose whether patients should be advised against the danger of interference with the natural precautions against infection. Dr. Dorman believed that in all the early cases of sepsis it was essential to know that the uterus was absolutely empty and clean and while too much emphasis could not be laid on the danger of curetting, or any vigorous instrumentation, this attitude of caution might sometimes be carried too far the other way. An instance of this error was seen in a case which came under Dr. Dorman's observations several years ago, where a patient developed a steadily increasing temperature about the sixth day postpartum. The physician in attendance stated that he had curetted the uterus several times and without an anesthetic. It seemed, however, that so much caution was exercised that the doctor had evidently not gone beyond the cervix because at the time of examination a piece of placenta nearly as large as a hen's egg presented itself at the external os. As soon as the uterus was cleaned out the situation cleared up at once. In concluding Dr. Dorman desired to inquire of Dr. Ill what criticism he had to make regarding the use of iodine in the uterus as an effective disinfecting agent to destroy the germs present in the dead tissues.

DR. A. E. GALLANT thought that the only reason why the bacteria which are ever present in the puerperal vagina and uterus set up trouble was because the lochial flow was dammed back in the uterus, and afforded the necessary conditions for bacterial growth, viz., stasis and moisture. He said that the one all important point in the prevention and cure of these cases was to overcome the obstruction by keeping the cervix open. Dr. Ill's alcohol injection facilitated this purpose by its astringent and hardening effect on the soft, spongy cervix, thus overcoming the tendency of the latter to close and permitting of better drainage from the uterine cavity. Dr. Gallant showed a bivalve uterine drain which he presented to the Society about eight years ago, which he had used in over 200 cases calling for uterine drainage. As soon as the drain and roll-gauze vaginal wick is inserted, and drainage was assured, the temperature went down and no further evidences of infection remained. Dr. Gallant's experience had taught him that packing does not drain the uterus except for the first day, after that the blood-soaked gauze ball is crowded down upon the internal os and acts as a plug preventing the escape of lochia, favors bacterial growth, absorption of toxins, and favors infection, which if the packing is not removed early, will result in septic metritis, septicemia, perhaps thrombosis and death.

DR. R. W. LOBENSTINE expressed deep interest in the alcohol treatment of the interior of the uterus, in the type of cases cited

by Dr. Ill. He stated that for a period of about twelve months he had used this treatment in the manner suggested by Dr. Ill, but that he had employed 50 per cent. alcohol and not the 25 per cent. solution. Dr. Lobenstine was forced to admit that he had not been able to convince himself that such treatment, in his hands, had produced any better results than he had obtained by his usual mode of procedure, which was briefly as follows: Every more or less severe case of puerperal infection, no matter what the organism was which caused the trouble, was placed on the operating table in the lithotomy position and after due preparation, cultures were taken. The vagina was irrigated with a weak iodine solution; all local ulcerations were treated with tincture of iodine or 10 per cent. silver nitrate; the interior of the cervix was carefully swabbed and the interior of the uterus explored, with one or two fingers. Anything that was found in the uterus was removed, providing this could be done gently; the uterine cavity was lightly swabbed with iodine and a hot saline douche given. Sometimes a light 5 per cent. iodoform gauze packing was required for twenty-four hours. This completed the local treatment in uncomplicated cases. If carried out aseptically with the utmost gentleness and care, this mode of procedure could do no harm and would do away with repeated examinations and intrauterine douches. The one exception to an early exploration of the cavity of the uterus in bad cases was that in which a sloughing cervix was present, where the exploration and treatment should not extend above the internal os. The curet should be avoided. In the hands of the general practitioner who has not had any special training in this line of work, and in those instances, where it is difficult to be aseptic, the above treatment should not be used and more conservative measures followed.

DR. E. J. ILL in closing stated that he had not intended to discuss the whole field of puerperal sepsis and the secondary conditions, but desired to refer only to the very acute stages of the disease. In answer to Dr. Brickner and others he desired to state that not all the cases brought in to him were early cases, but that late ones were unfortunately common. In replying to Dr. Gallant he said that he had never experienced any trouble in draining the uterus, for the gauze strip employed was very soft and narrow and just enough was put in to separate the anterior and posterior wall of the uterus, allowing a small piece to come down through the cervix. If the alcohol did not flow readily after it was poured in, all the gauze was at once removed and reinserted. Dr. Ill stated, moreover, that all of the larger pieces of tissue should be removed, but he desired to make it clear that the septic material was not altogether present in the large pieces, but that the serous exudate, clots and bits of decidua were equally infected and these cannot be felt by the gloved finger. This was the tissue which it was necessary to dehydrate and prevent making it a further culture medium. Dr. Ill had not had any experience with iodine solution in the uterus and did not disapprove

of it, but was perfectly well satisfied with the dilute alcohol solution which he always employed. Dr. Ill admitted that it was perfectly useless to use the alcohol drain after the third or fourth day when the tissues beyond the uterus had become infected. That condition was entirely out of the scope of the paper and needed a different kind of treatment. As regards the question of posture the speaker for a great many years had suggested that patients sit up two or three times a day for fifteen minutes to an hour even if their condition was normal. When the bacteria have invaded the blood, drainage of the uterus was of course entirely a secondary matter and if for example a septic endocarditis was present, other methods of treatment were indicated. In those cases he would not think of applying this alcohol drain, but if the cases were seen within twenty-four or forty-eight hours at the latest, good results would be obtained with the method. He did not find any case in which the drainage gauze dammed back the discharges.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Meeting of January 26, 1911.

H. D. FURNISS, M. D., *in the Chair.*

CYSTOCELE AFTER HYSTERECTOMY, CURED BY COLPECTOMY.

DR. A. E. GALLANT presented a patient whose uterus was removed in 1897. She was fifty-four years old when she consulted Dr. Gallant in 1909. She was the mother of nine children, the last born eighteen years ago. She was very much annoyed by a bulging bladder, backache, distress before and during micturition and with frequent passing of small quantities of urine.

A vertical incision was made from over the tumor from the vaginal vault to the hymen in front and back, followed by blunt dissection of first the right and then the left half of the vaginal mucous membrane, down to the hymenal opening. The dissection over the scar in the vaginal vault was a rather tedious process, otherwise the dissection presented no difficulties of special note. The first circular suture of ten day chromic gut was inserted as high up as possible; the second and third, each 1 inch lower; the fourth was placed just inside the hymen, and one of silk gut at the muco-labial junction. A dressing of balsam Peru and castor oil was applied. The patient was out of bed on the eighth day and had been well ever since.

LARGE FIBROID GROWTH IN A WOMAN AFTER THE MENOPAUSE.

DR. HIRAM N. VINEBERG reported this case. Inasmuch as the idea seemed to be prevalent among the profession that fibroids,

as a rule, ceased to give trouble at the menopause, he reported this case. The tumor he presented was removed from a woman fifty-three years of age; she had been under the care of a physician for over nine years because of repeated hemorrhages and symptoms produced by pressure. As a matter of fact, during the past two or three years, the hemorrhages had ceased by the onset of the menopause which had actually set in. But the patient had many pressure symptoms; she had indigestion, constipation, more or less pain, etc. When she presented herself at his office the tumor extended above the umbilicus and an operative procedure was at once advised. The operation he did was not especially difficult. This patient had never born children and she made a good recovery. The growth was larger than an adult head.

A CASE OF HYDATIDIFORM MOLE WITH CHORIOEPITHELIOMA
AND ECLAMPTIC SEIZURES.

DR. HIRAM N. VINEBERG presented this specimen because of its unusual interest and gravity. The patient was a young woman, of nineteen, and had been married six months. She appeared at his office about three months ago complaining of a great deal of pain in her abdomen. She looked very pale and pasty. Upon examination he found the uterus reaching to the umbilicus, pregnant, and two cystic masses situated behind the uterus. There was a large quantity of albumin and casts in the urine. Dr. Vineberg advised the immediate emptying of the uterus as well as the removal of the ovarian cyst at the same time or later.

The patient entered the hospital and, at operation, he found a hydatidiform mole. Seeing double cystic ovaries he desisted from any further attempts at emptying the uterus and did a hysterectomy. The microscopical examination revealed the presence of hydatidiform made with chorioepithelioma fairly advanced. She made a good recovery from the operation. Promptly after the removal of the uterus the patient had a distinct eclamptic seizure, a rare occurrence in cases of hydatidiform mole. Findley had collected 210 cases and in not one case did eclampsia occur. This was the fourth case of chorioepithelioma that Dr. Vineberg had seen within three years. The albumin soon disappeared from the urine. Recently she had small hemorrhages from the vaginal vault and this looked like a recurrence, although the pathologist could make no such report; he said that he found only connective-tissue cells in the removed growth and no evidence whatever of chorioepithelioma. There were no metastatic growths, so far as could be learned, in the lungs or elsewhere.

It was fortunate in this case that the patient presented double ovarian cysts otherwise the operator would have been reluctant to remove the uterus and probably would not have known of the presence of the malignant chorioepithelioma until some time after

when metastatic growth would have developed in the lungs or other organs.

PANHYSTEROCOLPECTOMY FOR PROLAPSUS VAGINAM.

DR. A. E. GALLANT read this paper. He said that in addressing an audience of specialists on so familiar a subject as cystocele, it was unnecessary for him to recapitulate the many methods and means employed for the relief and remedy of that condition which, thanks to the more careful and scientific obstetric training, was not so frequently met with as in years gone by, although the writer had but very recently seen, in one clinic, three well advanced cases.

That the greater number of cases could be and were relieved or cured by one or other of the many plastic, denudation or suspension methods was admitted by all; yet, on the other hand, there were quite a number of recurrences after such operations, even when associated with hysterectomy, and this led their late colleague, Dr. George M. Edebohls, to devise a new operation for prolapsus which he named "panhysterocolpectomy; a new prolapsus operation" (*Medical Record*, October 12, 1901).

Since Dr. Edebohls' first report the only reference they had been able to find was in a paper of Dr. Waldo's in which he reported three cases. In the discussion Dr. Edebohls stated that he had operated eight times; Dr. Boldt referred to two cases which were successful and fulfilled all the claims of the originator of the operation. These thirteen cases were remarkable because of the absence of shock, the rapid and smooth convalescence; in Dr. Boldt's cases the patients were out of bed the day following the operation, and this led him to remark that "I do not know that there is any danger whatever in the hands of one who does this sort of thing frequently," nor did the use of chromic gut offer any advantages over the plain gut.

While at the time Dr. Edebohls first published his paper, all were favorably impressed with the logical views therein advanced. It was not until July of 1910 that a case, referred by Dr. Rae, presenting the necessary conditions for so radical procedure, came to hand, in the person of Mrs. B., suffering from a well marked prolapse of the bladder and protrusion of a long ulcerating cervix, which it was feared might be of a malignant type. She was in her sixty-eighth year and had ceased menstruating fourteen years ago. Her husband readily consented to closure of the vagina. There was no trouble with urination. Her last child was thirty-three years old, and she had an old second degree laceration of the perineum. Her father had died of cancer of the shoulder; her mother, uncles, and cousins of tuberculosis.

The first step in the operation was the making of a transverse incision just inside the hymenal border posteriorly, and a longitudinal incision from the cervix to the fourchet; blunt and knife dissection of left posterior section of the mucous membrane; this was repeated on the right side. The second step in the

operation was making a circular incision just inside the vagina in front; dissection from right to center, and from left to center, leaving the flaps attached to the cervical junction. The third step was to free the bladder from the cervix; the anterior pouch was opened and the peritoneal cavity entered. Next the posterior culdesac was perforated, the broad ligaments clamped, and the uterus free. The broad ligament stumps were sutured individually and then drawn together and sutured. The fourth step consisted in the insertion of three catgut, purse-string sutures one after the other, taking great pains to push the preceding suture well upward before tying the next one below. A fourth suture just within the vestibule was tied down on a cigarette drain and completed the operation. The convalescence was afebrile; the patient was out of bed on the seventh day and sitting on the porch the day following. Denudation of the vagina did not interfere with its normal contractility, but rather seemed to excite it; this was very noticeable during the operation, especially when the anesthesia was diminished. The denudation could be very markedly facilitated by first making a circular incision through the mucous membrane at the vulvo-vestibular junction and by making four long incisions from the hymen to the cervix, quadrisecting the exposed vaginal membrane and by proceeding with the denudation of one strip after another, being careful to work in the loose cellular planes beneath the mucous membrane, downward and outward toward the cervix, leaving the flaps attached to the cervix.

The indications for panhysterocolpectomy were in women suffering from cystocele, with or without prolapse of the uterus or rectum, who were incapable of impregnation, who had passed the child-bearing period, and whose husbands were willing to forego marital relations, and in those in whom other operative measures had failed. Complete excision of the uterus and vagina with columnization of the vaginal walls was a safe and sane operation which would insure an absolutely permanent cure at the minimum of danger and loss of time and with a maximum of safety from recurrence.

Practically the only contraindications were the question of child-bearing and the loss of sexual relations.

Dr. Gallant presented photographs showing a large epithelioma protruding from the vulva in a woman seventy-seven years of age, which had developed on a cystocele of thirty years' standing. The mass prevented her from sitting or standing, except with her legs far apart; the urine dribbled over the tumor, scalding and burning her. The tumor with the lower third of the bladder was removed. The bladder was then drawn together by a purse-string catgut suture and the anterior surface of the uterus turned upward and sutured to its base. The vulva was closed with three silk gut sutures. The patient was thus made more comfortable until she died about three weeks later apparently from intestinal obstruction.

DISCUSSION.

DR. HERMAN J. BOLDT said that if there was a complete prolapse of the uterus and vagina there was only one operation to be done, the one just described. This he had performed five times. The technic described by Edebohls was the best they had. Dr. Boldt said he had not found this operation at all difficult to perform. If drains were used, then they were not following the technic of Dr. Edebohls. They should have a clean surface and therefore there was no occasion for the use of drainage. In two of his cases the patients had some temperature following the operation, but this soon subsided and gave no trouble whatever. This was, in his opinion, the only operation by which they could guarantee a cure of the condition.

DR. WESLEY G. VINCENT said that he had assisted Dr. Edebohls for many years and practically had done so up to the time of his death. He quoted from Dr. Edebohls' paper on "Pan-hysterocolpectomy; a New Prolapsus Operation" (*Medical Record*, October 12, 1910) as follows: "The operation is indicated whenever the certain and permanent cure of a prolapsus of the uterus and vagina, either primarily or after the failure of previous operation or operations, forms the one paramount desideratum, other considerations in comparison being relegated to the background. The limitations of its applicability and the contraindications arise from the necessity or desirability, in any given case, of perpetuating the functions of the uterus or vagina. In women past the child-bearing age the uterus need of course not be considered. It is quite a different matter, however, with the vagina, and the impossibility of further sexual relations must be clearly presented to the patient, and fully understood and accepted by her prior to deciding upon the operation. If the patient be a widow past the menopause, the decision will rest entirely with her; if a married woman, her husband must be consulted as well." Since Dr. Edebohls' death, Dr. Vincent had had one case, a married woman whose husband had died.

DR. HOWARD CANNING TAYLOR believed the operation described to be a very satisfactory one; at the same time it would be a mistake to operate on a woman of advanced age, even though she was willing to submit to it. A woman well along in years was a particularly hard subject for any plastic operation, and so the operation, panhysterocolpectomy, was the better. When there was a complete prolapse, the removal of the uterus and vagina was not a very difficult operation. Patients who were sixty-five or seventy years of age were not good subjects for any plastic operation. Personally he preferred to do the operation described by Dr. Gallant.

DR. THOMPSON TYLER SWEENEY reported one case that he had had at the Post-graduate Hospital in which he followed out the technic described and obtained a very perfect result.

CHORIOEPITHELIOMA WITH REPORT OF CASES.*

DR. MICHAEL CATURANI read this paper.

DISCUSSION.

DR. HERMAN J. BOLDT said that it was seldom they had the pleasure to listen to a paper so carefully worked out as the one just read; it showed a degree of industry not often met with. To-day they were all in a better position to understand the diseases under discussion; they had come to realize that chorioepitheliomata were by no means malignant. In many cases correctly diagnosed a cure had followed proper treatment. At the same time Dr. Boldt believed that the worse cases were apt to terminate fatally. It was seldom too that one had the opportunity of meeting this class of cases sufficiently early in order to perform a radical operation. In the instances reported by Dr. Vineberg the disease in all probability was detected early and so the radical operation done proved to be a radical cure. If the disease was removed sufficiently early, a cure would result. Some had said that it was better not to remove the uterus until the disease was advanced, but Dr. Boldt believed it was better to err on one side, to remove the uterus at once, rather than to wait two or three weeks longer.

DR. HIRAM N. VINEBERG did not think that in every case of hydatidiform mole, the uterus should be removed; in a previous case reported, the uterus was emptied and the patient had been well ever since. If Dr. Frank had seen the specimen when it had been removed, he would have agreed that the ovaries were completely disorganized and that there was nothing left but the sac.

With regard to the treatment of moles and when it was decided to empty the uterus, the wisest thing to do was a partial vaginal Cesarean section, emptying the uterus with the hand. Then if there was any doubt regarding the nature of the case, or if the surface was rough and gave suspicions of malignancy, the case should be carefully watched. After three or four weeks, if any hemorrhage took place, without even waiting for the report of a microscopical examination, he advised removing the uterus. Very often the report of such an examination was misleading, as it is not easy to diagnose early chorioepithelioma.

So far as his experience went, Dr. Vineberg said he took a rather more hopeful view than Dr. Boldt and believed the outcome to be rather good. In the cases referred to, there was no doubt regarding the nature of the growth. Both women were still living.

DR. HOWARD CANNING TAYLOR believed that chorioepithelioma was a rather rare condition; he had never had a case. He recalled one case of hydatidiform mole and this did not go on to malignancy. He had recently been called to a city not far away to see a patient in whom the curettings had been carefully examined and by a very prominent man. One week later he was called

*See original article, page 614.

up on the telephone and was told that the case was pronounced as one of chorioepithelioma and he was asked to operate. He did a hysterectomy. The uterus, however, seemed to be normal and an examination made by several pathologists showed that a mistake in diagnosis had been made. One cannot be sure of the diagnosis even when made by pathologists who have had considerable experience.

DR. CATURANI closed the discussion.

THE DIVISION OF FEES; ITS CAUSES AND REMEDIES.

REPORT OF A SPECIAL COMMITTEE OF THE MEDICAL SOCIETY OF THE COUNTY OF ERIE.*

At a meeting of the Medical Society of the County of Erie, held February 21, 1901, Dr. M. D. Mann presented a paper entitled "Division of Professional Fees." The address was fully discussed and a resolution was unanimously adopted directing the president to appoint a committee to investigate the entire subject, including the causes and possible remedies. In obedience to such instructions a committee was appointed and respectfully reports as follows:

Frequent meetings have been held and the matter assigned us has received careful investigation and consideration. With the object of securing cooperation and information from the profession, a circular letter containing twelve questions was sent to each member of the Society and a reply requested. The response revealed disappointing apathy and lack of interest in problems which vitally affect the welfare, standing and ideals of the medical profession. About 540 circulars were sent and thirty-one replies received. Attention is simply directed to this demonstration of indifference and no comment ventured. The result of the inquiry revealed a practically unanimous agreement that the chief causes of commercialism and its attendant abuses were overcrowding of the profession and too low a standard of education. Your committee has sought information wherever it could be obtained and has tried to arrive at definite conclusions after mature deliberation.

DR. MANN'S CHARGES SUSTAINED.

It has been found that Dr. Mann's statements and charges were true—that the practice of dividing fees or giving of commissions by some surgeons to physicians has existed in this city for several years, and that the exposure and criticism of the abuse was justified. We thoroughly approve acquainting the profession with the facts concerning this vicious and dangerous

*This report, from the *Buffalo Medical Journal* for March, 1911, is reprinted here not that it is essentially either gynecological or obstetrical, but because the editor feels strongly that it is a matter affecting the dignity and honor of the entire profession, that it is a disease which has spread somewhat widely and at times into high places, and that the best way to destroy its infection is to let the bright light of the utmost publicity shine upon it.

innovation, and favor warning the public of the unhappy results which will follow its continuance or increased prevalence.

SECRET METHODS EMPLOYED.

The division of fees has been accomplished by numerous methods. All of them are more or less adroit, deceitful and dishonest. The principal effort has been directed to provide secrecy. In the course of time some operators have become bolder than others and have gradually converted the practice of surgery into a traffic of operating on commission. No one publicly justifies the commercial bargain. If defended privately the excuse or argument is cynical, shifty, selfish or sophistical. After examination from every side there is no honest course except emphatic and unequivocal condemnation of this rather new species of hidden graft. No matter how cleverly the division of a fee is accomplished, it is done almost invariably without the knowledge of the patient. The person who pays for an operation does not know that part of the amount which has varied from 25 to 50 per cent. occasionally goes to the physician who recommended the operator. The physician and the surgeon are supposed to render their individual bills, and the afflicted person is entirely ignorant of the "gentlemen's agreement" or "community of interest" which has been introduced from the realms of high finance and legal honesty. The real purpose of the deal is to encourage the physician to send his patients where he can obtain a share of the money paid for relief or attempted relief. The surgeon may be highly competent or he may not and the physician may be influenced by financial encouragement. Anyway, the performance must pay because it has flourished and been profitable at times when other methods would probably have failed. At times, the demands of the physicians have been quite high and some of the prosperous merchants in surgery may begin to wonder if they have not created a Frankenstein.

PERNICIOUS RESULTS OF PRACTICE.

The practice may lead to unnecessary operating and junk surgery through increasing zeal to be busy and establish a false measure of success by the amount of income derived from business instinct and sagacity. The untrained and inexperienced cutter who has learned that there is money in operating, which is lost by the physician, is encouraged to obtain work which should go to the experienced, skillful surgeon who clings to the traditions and ideals of the profession; and will not cringe, stoop, or barter to obtain his earned and rightful privilege of employment. The fee may be increased or stretched by agreement to provide for distribution of the spoils, and altogether there is something about the whole wretched proceeding which smells of the rebater, the promoter, and the greed for disguised plunder.

MATTER SHOULD BE AIRED.

Some members of the profession keenly regret and reprobate any public exposure and discussion of the subject and fear that the public will become suspicious of all the members of the profession. The answer is simple: it is time the people knew of the practice and be given an opportunity to penetrate some of the mysteries surrounding the sick bed. In time the intelligently suspicious may distinguish between types of doctors and exhibit a tendency to investigate conditions quite puzzling to-day.

There is at least one profession that should be clean and have the confidence and trust of the public. Whatever may be its shortcomings in ability to help or save, the effort and purpose must be free from the taint of sordid commercial deals dependent upon human suffering and woe. There is very often no more complete picture of helplessness than the sick yearning for relief and not knowing where to seek needed succor. If abuses exist the profession must decide whether it will abolish them or allow them to prevail until the public is compelled to undertake the task. Your committee believes that the medical profession should perform the disagreeable work, and that an element is not afraid to expose or denounce iniquities which tend to degrade those who decently follow a noble calling.

LOCAL SITUATION.

Honesty and a sense of duty compel us to call attention to the local aspects of this question and confess that an evil has existed. Surgeons can apply a prompt remedy if they will, by simply stopping the practice. The committee has learned with pleasure and gratification that practically all of the operators in this county have signed an agreement that they will not indulge in any division of fees, and that any violator of the agreement will submit to a penalty which may be fixed by the Erie County Medical Society. It remains for the Society to determine the value of this agreement and what steps shall be taken to ensure enforcement. The appointment of a committee to act as a court of honor and consider complaints, examine evidence, and devise methods of punishment—when acts in violation of certain standards of professional dignity are perpetrated—is certainly worthy of careful consideration. We are sadly deficient in safeguards relating to professional conduct unless flagrant crime supplies a chance for decisive and wholesome action. The legal profession has more efficient control and well-defined, direct methods of procedure when they are employed. At present the purpose is to be suggestive in the hope of arriving at some consideration of this theme by the Society or its proper committee. If no other penalty can be found at this time, publicity in some form deserves attention as a possible corrective instrument. Something should be done to discriminate between the man whose influence is thoroughly damaging to the profession and the one

who helps to make it reputable and worthy of the highest admiration and confidence.

Any study of the causes and possible remedies of forms of commercialism, and especially of the division of fees, must be considered in a broad way. The evils are not local but general, widespread and probably national in scope. Other cities and localities throughout the country report that the same conditions are prevalent, and have developed in recent years. It would be misleading and unjust to search for causes or seek for explanations in this region when we fully realize that we are dealing with an epidemic and not an endemic variety of infection. In classifying causes the chief factor seems to be the unfortunate and unnecessary overcrowding of the medical profession. Those who have studied this phase of the problem arrive at the conclusion that about one-third or at most, one-half of the present number of physicians and surgeons in the populous districts of this country could fulfill all legitimate demands for human relief and secure a competent living. The average income is far below the amount required to permit of a mode of life consistent with the modern practice of medicine. A large proportion of the profession cannot obtain sufficient practice, experience or skill to become proficient. If the number of doctors in this country were diminished by two-thirds, or at least one-half, that proportion to the population would ensure adequate work and emolument and correspond more closely to conditions in other nations.

The lamentable overcrowding has a most deleterious effect upon the profession and the type of men who join its ranks. But the most baneful results will certainly be more keenly felt and appreciated by the public as they are discovered and better understood. At present this nation is in a semibarbarous state as far as provisions for control of national health is concerned. The full meaning of the conservation of natural resources has not yet been recognized as including human beings. In considering overcrowding no attempt has been made to include the army of new pathies, faddists and variegated assortment of healers, pseudo-scientists, or the old contingent of perennial quacks and nostrum venders. Perhaps in the advance of preventive medicine and medical education we are wasting too much sympathy upon the class "who never considered it necessary to add the incident of learning to the accident of brains." It has been claimed that overcrowding has long existed, and that evidence of many tricks to secure advancement are comparatively recent. There is no time for judicious discussion of the question whether there has been a decline in the moral standards of the profession, and how much any change is due to imitation and the influence of business crookedness and predatory customs which abound in a favorable environment. The important thing is to call attention to the fact that conditions have changed which make the effects of overcrowding more acute, and the scramble for

employment and a living more intense, and the temptation to resort to shrewd tactics more common and glaring.

PROGRESS OF PREVENTIVE MEDICINE.

During* the last twenty years, preventive medicine has made gigantic strides. The incidence of illness, particularly of childhood, has undergone a vast diminution, and the general death rate has practically been cut in half. The marvelous advance in surgery has removed a large group of patients from the field of medicine, and new discoveries have shortened the period of illness or changed its course. The tardy awakening to the importance of public health will add more and more force to the crusade against disease.

CONTRACT PRACTICE AND OTHER EVILS.

Vicious, dangerous and cheap modes of practice have developed to a surprising extent in latter days. Medical and surgical relief under contract, and stultifying agreements with lodges, societies, benefit associations, etc., and underpaid services to life insurance companies, have demoralized practice among young men and robbed others of just remuneration. These abuses are largely indefensible, delusive to the patient and public as the results are mostly ineffective, the service superficial and careless, and often of no genuine value. It is only just to the young physician and the public that this increasing abuse should be investigated and fully considered at a future time. There is much harm and humbug in the practice, and the physician should no longer be a tool for crude, cheap work. Positions held by medical men almost invariably yield totally inadequate compensation, and any protest is unavailing because the supply is apparently unlimited. The young practitioner seeks opportunity for experience, and a chance to escape idleness while waiting for employment in a profession where there is little or no room. There are two classes—one seeking the sick to make a living, and another expecting a reference of a patient or a consultation.

Practice legitimately belonging to competent physicians has been given over to faddists with a squint or kink, largely through the fault of narrow dogmatic members of the medical profession who could not or would not realize that the mentality of a patient required thought and attention, and that exercise of the body or its components was a physiological aid or necessity in treatment.

Hospitals and other institutions have been monopolized or exploited by a few, and some of the hospitals supported by philanthropy are simply hot-beds for fee splitting and commission jobbery. The industry is tolerated and winked at because the new method fills the private rooms. How much revenue can you supply, has occasionally become more essential than how much ability and character can you offer, when appointments are considered by trustees or dictated by the staff.

GENERAL PRACTITIONER UNDERPAID.

The division of a fee is only one abuse. There are many others harder to perceive and reach, and some of them have given an impetus to this method of trading and may perpetuate it. Undoubtedly the inducement of a commission has been extended in a pernicious effort to compete and grasp a share of operative work. Again it has been used as a furtive evidence of sympathy toward the lesser paid physician. This leads to a consideration of one of the principal contributing factors related to superabundance of doctors and their fees. The cost of living has decidedly increased and the mode of life has undergone a transformation too little appreciated. The fee and the income have not changed in proportion, if at all. Extravagance is the fashion and the necessities of a progressive physician accumulate each year. He belongs to a class which is struggling along, surrounded by combinations and the waves of prosperity lose their force before reaching him.

The surgeon and the specialist have educated the public to place a higher value upon their services, and there is force in the contention as a rule. Special skill, experience, long training, responsibility and technic are required, and the qualified surgeon is rarely overpaid. Whether the surgeon who gives away half his fee regards himself as overpaid is another question. The increase of operators and the lure of the knife because it loosens the purse strings, will soon equalize and distribute opportunity, and lower the rate of compensation. The surgeon has enjoyed halcyon days and deserved many of them, but he will have to guard and discipline the recruits to his guild, or the public will revolt.

PHYSICIANS MUST DEMAND PROPER REMUNERATION.

The physician is actually and proportionately underpaid, and it is almost entirely his own fault. If overcrowding prevents the demand for proper remuneration because others will act for less, let him place the responsibility for the overproduction of doctors where it belongs and register his protest not alone for selfish reasons, but vastly more for the benefit of the whole profession and the community. The competition that affects livelihood is keenest and most demoralizing among the mass and not among the few. There is no way by which the public can distinguish between the physician who has spent time and labor to become proficient and one who has not. We have but one degree and it may mean much or little. Nor is there any good reason why the fee of the physician should be rigidly fixed with no reference to the value of service. He should charge for the thoroughness, efficiency, skill, and time employed in his study of an individual case. Many times his diagnosis, advice and treatment are more valuable than surgical interference. The proper examination of a patient has become a problem involving time, wide knowledge,

and chemical and microscopic analysis and search, requiring more and more special training and skill. The time has come for the physician to assert his position and claim what he deserves. He should receive his reward openly and not secretly, and resent undervaluation to the patient and not to the surgeon. Let him stand on his own feet and not beg or barter with the surgeon for a hidden share which he hasn't the courage to ask for. Let him seek assistance when he needs it as if he were the patient, and receive it with a clean hand from a clean hand and preserve a decent opinion of himself and his possibly more fortunate confrère.

SUPERABUNDANCE OF MEDICAL COLLEGES.

The explanation of the overcrowding in the medical profession will be found in riveting attention upon the character of medical education in this country; and recently an opportunity has been afforded to reflect upon this interesting subject by the publication of the Carnegie Foundation Bulletin No. 4. It should be read by every member of this Society. This report may be considered intolerant and radical, but a great service has been performed; and the collection of facts based upon investigation will have a tremendous educational value and influence. Already its effect has become manifest, and the supplemental report will probably furnish a guide to action by comparison with European standards. It seems to be true that there are as many medical colleges in this country and Canada as in all the rest of the world. Canada still protects its population from the flood of graduates poured into this country. It also seems to be true that about one-third of the medical colleges in this country could be lifted to a higher modern standard and supply all the doctors needed for an indefinite time and growth of population. The facility and ease with which medical colleges could be established in this country has long been a disgrace. There probably was a time when the proprietary medical school with all its schemes for profits among a few was tolerable or even seemed to be necessary. That time has passed and the school of the proprietary type and its self-created professors will be eliminated. The medical school will ultimately be obliged to cease from depending upon students' fees for support, and liberal funds will be required to furnish the tuition which should be supplied to-day. The connection with a university will be close, true, and actual—not spurious or nonexistent, and trustees and councils will probably cease to be rubberstamps or respectable, irresponsible nonentities, well described by Dickens.

NEW STANDARD OF MEDICAL EDUCATION IMPERATIVE.

Many so-called medical colleges are still proprietary in spite of evasions and strenuous efforts to escape from that category. There are direct and indirect profits and scrutiny will go deeper and deeper to discover the true purpose and objects of these

prolific institutions of learning. It is not very strange that we have such a prodigal supply of medical colleges and that overproduction of the graduates continues unabated, while the professors must know that the oversupply is unnecessary and can't be assimilated? Is it not perfectly plain that doctors are responsible for the superabundance of doctors, and the attendant evils which result from the wholly unnecessary excess? The most wholesome, natural remedy would follow an awakening of the whole profession to their interest and duty in dealing with a national disgrace. The united profession should decide upon the necessity for medical colleges, what status they should have and maintain, what shall constitute a medical education, and what shall be required of a licentiate to practise upon humanity. There should be control of the appointments of professors, and their duties and obligations to those really concerned should be defined. These matters should not be left to a few self-perpetuating and self-constituted faculties who have enjoyed too much power, unrestraint, and domination. National and state supervision and radical reorganization of medical teaching and requirements is imperative and inevitable.

There is no reason at present why the standard of qualification cannot be raised more rapidly, and the comparison with other countries made less apparent or glaring. The flood of graduates can be checked with safety. It is sophistical to claim that a better class will gradually replace those who are striving to-day. That is the old cry heard with every advance. The real demand is for increased intelligent and stringent legislation and some guarantee that a state license assures true proficiency.

PRESENT STATE EXAMINATION NOT PROPER TEST.

A beginning has been made in this state by extending the power of the State Regents, and providing for a State Board of Medical Examiners. Objections and obstacles had to be overcome before this step was taken, and some good has been accomplished; but an examination for fitness to practise medicine and surgery by present methods must be obviously incomplete and unsatisfactory to anyone who has given the matter any careful thought. The Regents appoint the examiners. If any plan for selection because of special training or attainments is employed, some of the results are truly surprising. A recent excellent appointment deserves warm commendation. The schools, dogmas, creeds, and sects are represented, and possibly the recommendation of candidates may emanate from medical societies during political sessions. The Board of Examiners is presumed to safeguard the public and act as a clearing house and check upon the medical colleges. When the graduate satisfies the examiners and the law, he is licensed to practise on anyway, anyway he chooses. The candidate is subjected to a written examination and is supposed by many to answer correctly 75 per cent. of the questions. As a matter of fact he is given fifteen questions, allowed to select

ten, and must gain a marking of seventy-five upon them. Consequently he is really obliged to answer correctly 50 per cent. in accordance with the opinion of the examiners. The questions and answers are published frequently and it seems as though the students who make a collection of them and cram, are quizzed or assiduously, might find it advantageous. No time need be consumed in explaining to an intelligent physician how crude, farcical and unreliable such a test for admission into one of the highest professions must be of necessity. High percentages obtained in this way are cited with pride by the medical colleges as proof of the superior teaching and preparation. The professors and the examiners are both anxious to advance the standards, but new obstacles and conservative policies seem to block the way.

NEW STANDARDS MUST REPLACE OLD.

Your committee has learned with gratitude that the time is now near when the candidates will be compelled to reach a percentage of seventy-five on answers to the full fifteen questions. Thus progress is gradually assured. The time seems to be ripe to insist that the state examinations should in reality prove a candidate's fitness to practise medicine and surgery by demonstration of his knowledge at the bed-side and in the laboratory as well as by written evidence. Before entering such an examination, the applicant should be required to show that he has had actual experience and training in branches of medicine and surgery in a general hospital. It seems eminently fair to request that the licentiate to practise upon humanity in this state, should be as well qualified as the government carefully provides for the sailor and soldier. If such competence could be required, there are a great many problems which would be effectually settled. Of course, the machinery would have to be changed. More money and a reorganization would become necessary, but the real purpose in creating a State Board of Examiners would be achieved and their function as sentinels fulfilled. The requirements in preliminary education should certainly be increased in this state.

Legislation should be secured if necessary to assist progressive action on the part of the Regents, and transform the personnel, organization and duties of the Board of Examiners in accordance with present conditions and the need of remedial measures. This society may as well lead in this direction and make its influence felt in the State Medical Society. It will take time and wisdom to sift the facts and arrive at safe conclusions. There are many interests involved, and while radical action is needed, it should be sane and practical. If there is need of reformation and a sincere desire for improvement, relief seems to lie along that path. If the manifold taints of commercialism are to be discouraged and decreased, and the tone of the profession is to be raised, paramount causes must be attacked. There may be full indulgence in garrulity and strong disapproval of

wrongs expressed, but there are only two methods of gaining a greater height. The one who ought to climb must be helped or lift himself. It is about time to drive home the truth that "A little integrity is better than any career."

PUBLICITY RECOMMENDED.

Your committee unanimously recommends that this report be published in medical journals and copies be given to the daily press to be fully presented to the public if possible. Publicity is the safest, sanest course to follow. The confidence of the people must be maintained without equivocation or deception. If the revelation or confession hurts, let the blame rest where it belongs. The mass of the profession is sound, clean and unafraid to condemn ignoble motives and improper conduct which has stealthily stolen into its ranks. Regret is blended with the hope that frank disapproval will make any other action unnecessary.

FUNDAMENTAL CAUSES EXPLAINED.

The causes and effects seem easily discernible if they are fearlessly examined and the microscope is occasionally employed instead of a telescope. The historic course of events follow a natural sequence and it is not surprising that an avenging Nemesis is crying for retribution. When they are recited in proper order we can perceive a vast new nation with a rapidly increasing scattered population and no provision for the inception or control of medical education as it existed in older civilized countries. Medical colleges were of necessity created by small practically self-appointed groups with little or no restraint. Later they were too often established and employed for personal aggrandizement, questionable advantage, and direct and indirect profits. The false system inculcating special privileges, spread without proper jurisdiction or supervision. In the course of time the outcome was a multitude of proprietary medical schools and gradually a vast superabundance of diploma factories and an oversupply of the product. Substantial benevolent returns from the alumni in proportion to the annual crop were most enticing. Then came control and domination of institutions and increase of lieutenants. Nothing paid so well as professorships and titles when used to promote reference of cases and consultations. Frequently the aim in supply was quantity, not quality. Ultimately, lamentable overcrowding and a struggle for existence became only too evident. Ambitious doctors endeavored to advance and seize a share of reputation and compensation. Competition was difficult and became keener and fiercer. Many means were suggested to check the flood of graduates and a state examination was introduced. The hoped-for benefit has not been obtained. The number of unnecessary colleges and professors, the yearly flux of deluded graduates, the overcrowding and the baneful competition, continued to exist. Then came the increased cost of living and the added expense of modern

practice with no increase and often a decrease in income. This condition is tremendously influenced by industrial and financial revolutions accompanied by a toleration for moral obliquity and censurable methods in business enterprise. At last a vicious, misdirected mode of competition is found which proves financially successful. It is devoted largely to a pitiful scramble for the dollar and is still limited to a small part of the profession. One mode of gaining ascendancy and its tribute was followed by another much less tolerable and more reprehensible from a moral standpoint. It is one symptom of reckless revolt, and an adaption of the policy "After us the deluge." The great mass of the profession has a right to protest and complain of the character and amount of competition to which they have long submitted, but the fee splitter and the schemer by any method only add another more dangerous incubus. It is the outcropping of the worst polluted with a desire to substitute one abuse for another of which many have become thoroughly tired and exasperated.

The blame for the degradation and turmoil in the profession should be traced to its true origin and the labor of reformation belongs largely to those who are responsible for the conduct and output of institutions ostensibly intended for ethical and medical education and the laxity of government control which is the core of the whole problem. Let there be no privilege not beneficial to the whole profession and a fair field on level ground. The cleansing process should extend beyond any one evil now exposed to the light. Its associates and their ancestors need ventilation and disinfection also.

REMEDIES SUGGESTED.

As the work of the committee progressed, many cynical remarks have been heard to the effect that any exposure and consequent action will prove ephemeral and futile. It is claimed that this society has no legal power to check or abolish such an evil as has been described. But there are methods which can be used in a drastic manner, if necessary. We ask that this report shall not fall cold and be deposited quietly in the archives of this society. What the Erie County Medical Society begins should be thoroughly finished. A form of bribery must be starved by ostracism and denunciation, or strangled by some form of punishment. Let the matter be kept before the society at future meetings. Investigation should continue. Activity and determined persistence will encourage other societies to follow, and the benefit will be widespread. Now that the facts are known and the dangers appreciated, reform or supine toleration are the only courses left open.

RECOMMENDATIONS OF COMMITTEE.

To ensure and possibly guide effective remedial efforts, the following recommendations are submitted and approval requested:

1. Publication of this report in the medical journals and the daily press.

2. Reference of that portion relating to complaint, investigation and devising some form of punishment, to the committee on "Professional Relations," and thus provide for continued watchfulness and further consideration.

3. It is recommended that the secretary transmit a communication to the State Board of Regents, urging the necessity of a higher preliminary educational requirement, and definite changes in the method and scope of the examination for a license to practise in this state; and that this matter be referred to a proper standing or special committee to arouse interest, stimulate inquiry and promote necessary progressive action leading to higher medical education.

4. It is also recommended that a special committee be appointed to report at an early date upon the extent, character, effects of professional services under contract or by agreement with companies, corporations, fraternal societies and life insurance companies; this report to include if possible, practical remedies which may be applied to diminish this form of employment or place it upon a different basis.

Your committee was assigned a difficult, unpleasant and undesired task, and has discharged a duty with honest intent, free from any malice, prejudice or unkind feeling.

Respectfully submitted,

JOHN H. PRYOR, M. D. (Chairman),
M. D. MANN, M. D.,
BERNARD BARTOW, M. D.,
F. PARK LEWIS, M. D.,
WILLIAM GAERTNER, M. D.,
IRVING P. LYON, M. D.,
E. A. BOWERMAN, M. D.,
T. J. WALSH, M. D.,
GROVER WENDE, M. D., Ex-officio.

REVIEWS.

THREE CONTRIBUTIONS TO THE SEXUAL THEORY. By Professor SIGMUND FREUD, L. L. D., Vienna. Authorized translation by A. A. BRILL, PH. B., M. D., Clinical Assistant, Department of Psychiatry and Neurology, Columbia University; Assistant in Mental Diseases, Bellevue Hospital; Assistant Visiting Physician, Hospital for Nervous Diseases. With Introduction by James J. Putnam, M. D., New York. The Journal of Nervous and Mental Diseases Publishing Co., 1910. \$2.00.

The three essays included in this monograph are entitled: The sexual aberrations, infantile sexuality and the transformation of puberty. Freud's analysis of these topics is intensely original and is of course largely colored by his conception of the so-called

"erogenous zones," that is, the ability of parts of the body other than those of the sexual organs proper to create sexual impulses. On this basis, Freud has built up the psychological fabric of hysteria and various psychoneuroses. He believes that hysteria is the result of a subconscious repression of a previous remembrance, usually of a sexual character, and that the various symptoms of hysteria represent an attempt on the part of the individual to substitute sexual strivings by stimulation of the various erogenous zones. Freud's method of cure is based upon the endeavor to draw this subconscious repression back into consciousness by a method which has been aptly called "mental catharsis." The fact that this therapeutic method is attended with success in the large majority of instances substantiates this conception.

However, whether one agrees or disagrees with Freud's theory, there is no question but that his teachings are extraordinarily suggestive and have profoundly influenced the modern study of psychiatry. To anyone in the least interested in mental science, these essays constitute fascinating reading. The incisiveness of the reasoning, the keenness of observation, and the ingenious interpretation of clinical phenomena by psychological data, all stimulate the highest powers of the intellect.

The extraordinary concentration of exposition and the subtlety of expression make translation of Freud's writings difficult, but Dr. Brill has performed his task with ability. E. T.

AFTER-RESULTS OF ABDOMINAL OPERATIONS. By ARTHUR E. GILES. Bailliere, Tindall & Cox, London. Price, 10/6 net.

This is a valuable contribution to the very important question of "what becomes of the operated patient after leaving the hospital?" The number of cases is large enough (1,000) to enable the author to draw working conclusions. A great deal of care has been exercised in following up the postoperative fate of the cases, and Mr. Giles was fortunate enough to be able to trace the great majority of his patients.

The questions asked were salient ones and always with the view of ascertaining exactly whether the operation had influenced the general condition for bad or for good and whether the after-results actually justified the operation performed, whether enough or too little had been done, and if in the latter event, the patient required a subsequent operation. Also whether she was finally cured, relieved or made worse by the operation.

The all important questions of artificial menopause with its attendant symptoms, sex instinct or feeling following extirpation of one or both ovaries, with or without extirpation of the uterus are taken up and some very striking facts are revealed.

The matter of pregnancy following unilateral salpingo-oophorectomies, of myomectomies and ventrofixations is discussed and definite information is given regarding the possibility of patients who are still in the child-bearing period to conceive and

go on to full-term labor. Space forbids us to cite in detail the conclusions which the author has reached. Suffice it to say that the work fills a distinct gap in gynecological lore and can be perused by anyone with both profit and interest.

OBSTETRICAL NURSING FOR NURSES AND STUDENTS. By HENRY ENOS TULEY, A. M., M. D., Professor of Obstetrics, Medical Department, University of Louisville. 73 Illustrations. Price, \$1.50.

This volume is designed chiefly to instruct and encourage nurses for practice in midwifery, but is also supposed to serve as a "guide to further study in more elaborate works" for the medical student, while the practical hints given to the obstetric nurse in the matter of preparation of labor supplies, etc., are useful (and may be found in any of the numerous small books written on the subject), the more scientific fragments are misleading and erroneous in a great many parts.

For the student there is more hope as he may resort to further study in more elaborate works. But to teach nurses that there are four stages to menstruation . . . among which is the *stage of destruction*, in which the membrane is shed down to the muscular layer, to be again formed in the stage of repair . . . that the egg is discharged from the Graafian follicle on the surface of the ovary and is at once grasped by the fimbriated extremity of the Fallopian tube . . . that the fecundated ovum falls into the uterus where it is held by the folds of the mucous membrane comprising the decidua reflexa . . . that the tube can only be stretched to the size the ovum obtains at six weeks when it ruptures, etc., is taking unfair advantage of a class of pupils who are not "encouraged to read more elaborate treatises."

I. C. R.

LA GREFFE OVARIENNE. HISTORIQUE. RESULTATS CLINIQUE ET THERAPEUTIQUES. Par le DR. IVAN SCHEUVER, 182 p. avec. 9 figures. G. Stinheil.

The monograph concerns itself for the most part with a historic review of the subject since Chrobak's suggestion in 1895. The author adds several hitherto unreported observations and reports histologic findings of his own case, eight months after the graft had been preformed. His conclusions are:

1. Ovaries may be transplanted near their normal situation or in the deeper part of the abdominal wall.
2. By either method the ovary may go on to develop and give rise to "congestive symptoms."
3. The abdominal graft has the disadvantage of necessitating a laparotomy in case untoward symptoms develop.
4. The subcutaneous graft seems to present signs of special vitality.
5. Examination of a grafted ovary eight months later showed that while it does not retain its full and complete vitality, it nevertheless retains a great many of its normal constituents.

6. The grafted ovary becomes painful and congested for several days at intervals. This is presumptive evidence that it remains a highly specialized organ with specific functions.

7. This may cease at the end of three weeks or as late as twenty-three months following the graft.

8. Artificial menopause is not always presented by ovarian transplantation.

I. C. R.

THE PHYSIOLOGY OF REPRODUCTION. By FRANCIS H. MARSHALL, M. A. (Cantab.), D. Sc. (Edin.), Fellow of Christ's College, Cambridge, and University Lecturer in Agricultural Physiology, with a preface by Professor E. A. SCHAFER, Sc. D., LL. D., R. R. S., and contributions by WILLIAM CRAMER, Ph. D., D. Sc., and JAMES LOCKHEAD, M. A., M. D., B. Sc., R. C. S. E. With illustrations. Longmans, Green & Co., 39 Paternaster Row, London. New York, Bombay and Calcutta, 1910.

There is hardly any doubt that among physicians interest in generative physiology has increased in recent years, stimulated in a larger measure by the epoch-making studies of Peters, von Spee and others on the one hand, and by the extensive investigations upon the internal secretions on the other. As far as we are aware, this is the first comprehensive treatise dealing exclusively with the physiology of reproduction and as such, the work fills a definite need. The titles of the chapters indicate the wide and catholic scope of this book. These are: The breeding season; the æstrous cycle in mammalia; the changes that occur in the nonpregnant uterus during the æstrous cycle; changes in the ovary, oogenesis, etc.; spermatogenesis and insemination; fertilization; the accessory reproductive organs of the male and the mechanisms concerned in insemination; the biochemistry of the sexual organs; the testicle and the ovary as organs of internal secretion; fetal nutrition and placenta; the changes in the maternal organs during pregnancy; the innervation of the female generative organs—uterine contraction—parturition—the puerperal state; lactation; fertility; the factors which determine sex; phases in the life of the individual; the duration of life and the causes of death.

While the exposition is largely comparative, emphasis is placed upon the generative anatomy and physiology of mammalia, especially the human. The work appeals especially to the biologist, but medical men interested and engaged in the study of reproduction will find this work invaluable.

Owing to the multiplicity of facts, this book does not lend itself easily to a review within prescribed limits. It may be said without hesitation, however, that we have seen few books in recent years which afford a better sense of satisfaction. The author reveals a masterly grasp of his subject; the presentation is clear and judicious, and every study of any importance upon generative physiology receives proper consideration. In fact, the references alone should render the book of great value.

E. M.

PRIMER OF HYGIENE. By JOHN W. RITCHIE, Professor of Biology, College of William and Mary, Virginia, and JOSEPH S. CALDWELL, Professor of Biology, George Peabody College for Teachers, Tennessee. Illustrated by Karl Hassmann and Herman Heyer. Yonkers-on-Hudson, New York. World Book Company, 1910.

PRINCIPLES OF PUBLIC HEALTH. A Simple Text-book on Hygiene presenting the Principles fundamental to the Conservation of Individual and Community Health. By THOS. D. TUTTLE, B. S., M. D., Secretary and Executive Officer of the State Board of Health of Montana. Yonkers-on-Hudson, New York. World Book Company, 1910.

These books fulfill their purpose admirably. The language is simple; the authors have confined themselves to the limits of what we believe children should be taught and the exposition is interesting. The illustrations are delightfully naive and their point is easily grasped. Questions are suggested at the bottom of each page for purposes of review. It is gratifying to note that the subjects of Hygiene and Public Health are at least being introduced into the curriculum of public schools, and that such excellent manuals as these are available for this purpose.

E. M.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Vaginal Cesarean Section, Metreuryseo-hysterotomy and Labor a la Bouddha.—A. Dührssen (*L'Obst.*, Nov., 1910) says that the classical Cesarean section is the most dangerous operation known since it transplants, if the woman is infected, the pathogenic microorganisms from the uterus into the peritoneal cavity. As a remedy, and an operation that may be safely employed in the majority of cases, the author recommends vaginal Cesarean section. Vaginal Cesarean section consists in the opening of one or both of the culdesacs, the separation of the bladder from the peritoneum, and an incision of the wall of the uterus up to the insertion of the serous membrane. If both culdesacs are opened one cannot fail of obtaining an opening sufficient for delivery. The author has simplified this operation, which he calls metreuryseo-hysterotomy. It is especially useful when there is infection which would contraindicate abdominal section. This operation may be made radical by combining with it the removal of the uterus by the vagina after delivery. Vaginal Cesarean section is recognized as rapid, devoid of danger, and not blindly done. It is indicated in all grave accidents compromising the life of mother or child when the cervix cannot be dilated by ordinary methods. The author's simplified operation can be done by

any practitioner if he has studied the necessary incisions and practised the operation on the manikin devised by the author. This simplification consists in the introduction of a balloon Champetier de Ribes, which is filled with air, withdrawing this balloon forcibly toward the vulva, and doing the section on the balloon. The assistant may be a midwife, who draws upon the balloon and holds the speculum. The advantages of this operation are that when a dilatation with the balloon is unavailing we are in a position to proceed with it at once; the traction brings the uterus down to the vulva; by continuing the incision into the uterine wall anterior and posterior the traction of the balloon in different directions brings the two culdesacs into view; the balloon produces an ischemia which renders the operation almost bloodless. It is of great value in placenta previa. It transforms the vaginal Cesarean section into an easy operation. Ergotine is given after the balloon is in place, and after its removal the child may be extracted by version or forceps. Expression removes the placenta and if hemorrhage continues the vagina may be tamponed with iodoform gauze. When it ceases the uterine wound is sutured and the vaginal wound requires no sutures, a place being left for drainage, which is always essential. This method has been applied systematically at Munich for a year with excellent results, and has produced a lessening of the mortality of mother and child. In deformities of the pelvis thousands of children may be saved by this method. More may be saved by a combination of vaginal and abdominal incisions made extraperitoneally below Poupart's ligament. This the author calls the *accouchement à la Bouddhâ*. It is performed by making an incision below Poupart's ligament of the same length as the ligament down to the fascia transversalis, ligation of the epigastric artery, cutting of the round ligament, and raising the peritoneum from the bladder. Metreuryseo-hysterotomy is then done, and the incision is prolonged toward the fundus of the uterus. The forceps is applied and the fetus extracted through the pelvis or it may be delivered through the abdominal incision. This is the most perfect form of Cesarean section extraperitoneal. Drainage is perfect; it may be done in case of infection and tympanites uteri; it is not difficult to perform when the practitioner has once seen it done. It is superior to symphysiotomy in not opening the articulation; it may be employed in greater degrees of contraction without fear of tearing the organs; the child never suffers, since the infant avoids the pelvic ring. The author has performed this operation in forty-two cases with four deaths, none of which were due to the operation. In the last twenty-four operations done by the simplified method there has not been a death. This operation is outside of the peritoneum; it may be done very early; drainage is perfect; deliverance in normal; dangers for future labors are no greater than after vaginal section; the esthetic results are excellent.

Bacteriological and Clinical Studies of Puerperal Infections.—G.

L. Basso (*Folia Gynaecologica*, 1910, vol. iv.) reviews the bacteriological investigations by various authors of the presence of microorganisms in the discharge from vagina and uterus in cases of puerperal infection. He then gives the results of his own study of hemolysis of streptococci in puerperal infection in connection with examination of the secretions in the different months of pregnancy and the lochia collected from the vagina and uterus of puerperal patients, healthy and febrile. These examinations occupied a year, and included eighty-two cases of puerperal infection of various degrees, 100 cases of normal pregnancy and 150 cases of afebrile puerperium. The author's results are tabulated and detailed histories of the cases of puerperal infection are given. He found streptococci alone or associated with other germs in a considerable number of the 150 normal puerperal cases without evidence of their doing any harm. They were present in the vaginal secretion in fifty-seven cases, eight times hemolytic; in the uterine secretion they were present twenty times. Staphylococcus pyogenes was found in the vagina in sixty-nine cases and in the uterus in fifteen. The author's conclusions are these: In as many as 25 per cent. of healthy gravid women streptococci may be present, even the hemolytic type in 4 per cent. without any influence on the puerperium. In women in labor, even when febrile, the blood presents no germs. In the uterine discharge of normal puerperal women the streptococcus is present in 13 per cent. in saprophytic condition; it is found in the vaginal lochia in 38 per cent. In 64 per cent. of the cases of puerperal infection of varying degree of gravity streptococci were found in the lochia, and in seventeen cases these were hemolytic. The presence of these germs is not an evidence of severity of the disease or a reason for giving a bad prognosis, since they were absent in some severe cases and present in some which were light. Hemolysis does not indicate virulence of these microorganisms. Even presence of germs in the blood does not indicate a bad prognosis unless demonstrated repeatedly. Examination of the lochia is of value only when corroborated by clinical symptoms, and bad conditions of temperature and pulse.

Infiltration of the Walls of the Uterus by the Ovular Chorion.—P. Poso (*Archiv. di ostet. e gin.*, Serie II., Anno II., 1909-1910), after making an exhaustive study of cases of infiltration of the walls of the uterus by the structures of the chorion in cases observed by himself and those published by other observers, formulates his definite conclusions. The ovular chorion, passing the limits of the decidua, and deviating from its physiological rôle of excretory organ of the fetus, may invade the uterine wall through the vessels of the myometrium, and interfere with the contractility of the organ to a varying degree. This may occur at any moment after the formation of the placenta. In the early period, before the formation of the primitive villi and the primary intervillous spaces, it may invade the myometrium, expanding the circulatory canals. Ectoderm and mesoderm advancing freely

develop as far as the spaces allow, and form masses of bizarre shape. If the invasion occurs when the chorion has already invaded the vessels of the uterus it takes the form of the chorionic villi. The internal blastocystic formations follow a harmonious system of development, which may later be disturbed by anomalies in the relations between the chorion and uterus through infiltration. If this begins early the irregularity of development causes an abortion. If the organ has already served its purpose and is an organ ready to atrophy the pregnancy will go on to labor. The effects are seen only when the muscle is called upon to act normally. The chorion may degenerate partially or totally into a vesicular mole, and in this form infiltrate the uterine tissue. This development will depend mainly on the degree of extension of the molar degeneration. It may go on to the formation of the infiltrating and destructive vesicular mole. Microscopic observations show that all these forms of degeneration depend on one and the same process, with the same essential characters: infiltration of the chorion into the vascular sinuses of the myometrium of the ovular surface or placental area; adhesion of the entire chorion to the muscular tissues; invasion varying only in degree from that which is normal at the placental area; and as a final result necrosis of the invaded and invading tissue, extravasation of blood, and formation of coagula; transportation of emboli into other organs and repetition of the same process, and formation of necrotic-hemorrhagic areas. Chorionic infiltration of the uterine walls is an anatomo-pathological process by itself, distinct from any other pathological process by its histological characteristics, by the dignity conferred upon it by these facts, and the clinical results which it explains. It furnishes data from a new pathological chapter dealing with the various phases of placental development, which this conception clarifies and unifies. In this chapter are included the chorioepithelioma, the infiltration of the chorionic villi which cause placental adhesion, and some heteromorphous forms of infiltration, of which the author's case is unique.

Disability Resulting from Childbirth.—In an analysis of 2634 obstetrical cases, H. M. Little (*Can. Med. Assoc. Jour.*, 1911, i, 125) decries the use of the abdominal binder. While he does not hold it responsible for all the ills resulting from the management of the puerperium, he believes that it is a most important factor in its influence on the adverse conditions resulting from labor. It opposes any involution of the round ligaments, which would tend to draw the uterus forward; it prevents the falling forward of the uterus upon the bladder, with the consequent tendency to spontaneous micturition, and, finally, tends permanently to hold the uterus back, so that the anterior lip of the cervix is drawn forcibly from the more or less fixed posterior lip, and laceration, if present, is prevented from healing by the formation of scar tissue in the angle of the wound. Not only does this permanent opening of the cervix cause discomfort later, but it is

usually associated with a permanent backward displacement of the uterus. Where it is not used it is possible to obtain a better idea of the involution of the uterus and of the condition of the bladder, and its absence allows freedom of movement by the patient with a resultant improvement in the condition of the abdominal muscles. It is as important to avoid over-stretching of the abdominal muscles by a too long second stage, as, on the other hand, it is wrong to undertake operation before the cervix is fully dilated. While it has ceased to be a disgrace to allow a laceration of the perineum, now the disgrace is to allow such a laceration to go unrepaired.

Hematomata of the Sternomastoid and Torticollis from Congenital Myopathy.—A. Couvelaire (*Ann. de gyn. et d'obst.*, Jan., 1911) says that Strohmeyer's hypothesis that congenital torticollis is due to traumatism at birth is untenable, since cases of torticollis have been examined in which the muscle was found congenitally healthy. Congenital lesions of the sternomastoid muscle are not exceptional without any preceding hematoma. They consist, as seen in new-born infants studied by the author postmortem, of lesions of a variable number of the muscle fibers of the type of degeneration with more or less marked hyperplasia of connective tissue. They may be accompanied by infiltration of the muscle with blood due to the difficulty of extraction of the fetus at birth. These traumatic lesions are favored by the pathological condition of the muscle that occurred before birth. Complicated or not by congenital traumatisms of obstetric nature, these congenital lesions are sufficient to explain the clinical symptoms of torticollis at birth. The delivering physician should not be held responsible for the occurrence of torticollis, which is very possibly of syphilitic origin.

Anatomical Causes of Inability to Nurse Infants.—Rud. Th. Kaschke (*Zent. f. Gyn.*, Jan. 14, 1911) says that he has never seen a mother absolutely unable to nurse her infant. Physicians should educate the public by teaching women that they should and must nurse their own children. By the use of Bier's suction, by the ordinary process of drawing the milk with a pump, and by massage we may increase the deficient supply of milk in most cases, and assist, at least, in the feeding with combined mother's milk and artificial foods. In case of depressed and sore nipples one should not dry up the milk, but should properly treat the condition and continue nursing. The nipples may be drawn out with the fingers and a strongly sucking child applied to the breast. Bier's suction glass or a breast pump may be used for the same purpose. During the first thirteen days of the puerperium every mother may be taught to nurse her child. She will be able to continue nursing afterward under favorable circumstances. Small breasts often give more and better milk than the large, apparently well-developed ones.

Ovarian Pregnancy.—E. B. Young and L. J. Rhea (*Bost. Med. Surg. Jour.*, 1911, clxiv, 264) record a case of apparently

ovarian pregnancy in a single woman of twenty-seven years who had flowed irregularly for eight months. Aside from the flowing the only significant feature was symmetrical enlargement of the left ovary. Operation revealed evidence of an old pelvic peritonitis, a small amount of black fluid blood and a large recent blood clot completely surrounding the left ovary which contained what appeared to be a large corpus hemorrhagicum. The fimbriated end of the left tube was closed and adherent to the bottom of the pelvis. The sac in the ovary was ruptured. When opened it was found to contain a small embryo. The ovary showed no abnormal adhesions. The right tube and ovary were normal excepting for evidences of the old pelvic peritonitis. The Fallopian tube of the left side was free from blood clot and contained no chorionic villi or decidual cells. The cyst wall consisted of ovarian tissue and it contained chorionic villi.

Primary Sterility in Women.—A. J. Rougy's (*Med. Rec.*, Feb. 18, 1911) remarks are based on the study of 120 cases applying for treatment for primary sterility and whose husbands were also examined. He found that sterility was due to inflammatory processes of gonorrheal origin in fully 70 per cent. of the cases. Dysmenorrhea was present in 84 per cent. of the patients. Displacements of the uterus are not great factors in the production of sterility, and seldom does pure mechanical obstruction cause sterility. It is the stenosis of the cervical canal produced by endocervicitis that prevents conception. Sedentary occupation in early adult life is the most important cause for the various flexions of the body and cervix of the uterus. Leukorrhea was present in 95 per cent. of the patients and in 20 per cent. the reaction was highly acid. The small or infantile uterus, unless associated with other conditions pointing to congenital mal-development, seldom, if ever, causes sterility. In nearly 12 per cent. of cases of primary sterility one is unable to account for it either in the husband or wife. Seventy per cent. of the husbands of women who suffer from sterility have had gonorrhea, and in 40 per cent. the infection extends to the posterior urethra and neighboring structures and is incurable. Thirty per cent. of men who were infected with gonorrhea suffer from azoospermia. The best operative results were obtained by the dilatation and stem pessary method in cases that had not suffered from severe dysmenorrhea. The Dudley operation did not cure the severe forms of dysmenorrhea. Plastic operations on the tubes and ovaries do not give much hope for the cure of primary sterility. The prognosis for the cure of sterility is unfavorable; 80 per cent. of the patients remain uncured. The greatest single factor in the production of sterility is gonorrhea and its complications. A goodly number of cases require medical treatment only, and as soon as the cervical discharge is cleared up conception is likely to take place. Pathological lesions in the genital tracts of both husband and wife may in time disappear and therefore one must

never give an absolutely unfavorable prognosis unless the husband is suffering from aspermia.

GYNECOLOGY AND ABDOMINAL SURGERY.

Autoplastic Ovarian Transplantation.—As the result of experiments on eight rabbits and one bitch J. H. Nattrass (*Austral. Med. Jour.*, December 20, 1910) concludes that it is feasible to transplant the ovary to another portion of the subject's body. In the experiments described success is claimed in grafting it on to the kidney, spleen, peritoneum, periosteum, external oblique and external intercostal muscles. When the transplanted ovary is examined in the early stage it is found to be firm, whiter and slightly larger than normal. This is due to swelling of the cells of the stroma which have undergone fatty degeneration. The amount of this degenerative change seems to be inversely proportional to the vascularity of the tissues receiving the graft, and directly proportional to the thickness and density of the graft itself. Thus there was more degeneration in a subcutaneous than in a renal or splenic graft. In the older grafts there is a diminution in the size of the ovary. There is an increase in the amount of fibrous tissue, a progressive absorption and repair of pathological products, a continued development of egg cells, and production and maturation of Graafian follicles, although not nearly to the same extent as in the normal ovary. The grafts become firmly adherent to the adjacent tissues by dense fibrous bands. When placed in its new position it is undoubtedly nourished by transudation of fluid from the lymph spaces of the adjacent tissue, hence the periphery of the ovary, the egg-bearing part, always retains its vitality; but later, blood-vessels become developed and vascular union established, the graft thus receiving blood from the arterial system. The slut whose ovaries were removed from the abdominal cavity and were grafted, one on the external oblique muscle and the other in the sheath of the rectus muscle, repeatedly showed all the symptoms of sexual heat, showing that the ovaries, even though in this abnormal position, continued to carry on their functions as organs of internal secretion and to regulate the sexual life of the animal. The writer advocates autoplastic ovarian transplantation in order to avoid precipitating the menopause in cases where it is necessary to remove both ovaries and in which at least a portion of one may be subsequently dissected free. Thus in some cases of uterine carcinoma where there is a reasonable hope of their being free from infection, while it is not wise to leave them in the pelvis, it would be safe enough to graft them subcutaneously in any accessible part. Portions of bilateral cystic ovaries might also be grafted subcutaneously where they could be reached if cyst formation recurred. Before puberty it is especially important to leave some ovarian tissue in order to insure development of secondary sexual characteristics. When as a last resort the ovaries are

removed for the relief of dysmenorrhea a portion should be transplanted so as to retain their internal secretion and postpone the menopause.

Functions of the Great Omentum.—In an attempt to elucidate some of the problems concerning the functions of the great omentum, I. C. Rubin (*Surg. Gyn. Obst.*, 1911, xii, 117) has made observation at 100 autopsies and carried out a number of experiments upon animals. These studies have convinced him that the omentum has no spontaneous mobility. The displacements of the omentum may be explained by: (a) intestinal peristalsis; (b) intraabdominal tension; and (c) the static condition of the stomach and colon and of the small intestine; (d) the anatomical relationship of the omentum to the gall-bladder and spleen. The omentum has no demonstrable "chemotaxis." The amount of intraperitoneal fluid plus the amount of gas contained in the large intestine account for this apparent intelligent retreat of the omentum from virulent infective processes. In addition the suction action of the diaphragm under changed conditions of intraabdominal tension explains the apparent upward "chemotaxis" of the omentum in inflammatory lesions of the upper abdomen. The omentum has no intelligent and spontaneous protective rôle. Such protection as it apparently displays is simply due to its properties as peritoneum, and not as a superior organ with definite functions. It cannot restore vitality to necrotic organs, nor vascular supply to those deprived of their circulation. The end-product of an adhesion between the omentum and a foreign body is the destruction of the foreign body; between the omentum and any other abdominal viscus is scar tissue. The omentum does not invariably spontaneously repair defects in hollow or solid viscera; it does this imperfectly in man. Experimentally, when the rent is not too large, the omentum seems to occlude it and prevent leakage from the intestine. In perforated appendicitis, for instance, while the omentum is present in a great number of cases at the seat of the perforation, peritonitis, due to leakage, nevertheless frequently occurs. The usefulness of the omentum in inflammatory lesions of the abdomen depends upon (a) its power to form adhesions which isolate and render innocuous toxic products; (b) to its power of absorbing and eliminating toxic products or destroying them by virtue of its phagocytic elements. But when contrasted with the sequelæ, intestinal obstruction, pain, etc., its beneficence is overbalanced. The chief functions of the omentum are those of any other mesentery, namely: (a) the fixation of viscera; (b) vascular supply. When the omentum is found adherent to an intraabdominal tumor the probabilities are that the mass is inflammatory and not neoplastic. If the tumor is adherent to a neoplasm, the tumor invariably has undergone inflammatory changes. (Ovarian dermoids.) In exploratory gall-bladder operations it is well to remember that an "adhesion" between this viscus and the omentum does not necessarily mean inflammation. The ad-

hesion may be a normal mesentery of the gall-bladder, contributed by the omentum. Care should be exercised, therefore, in the examination of the adhesion before it is unnecessarily separated, and before the gall-bladder is removed. The best method of preventing adhesions between abdominal incision and omentum consists in the application of a continuous peritoneal catgut suture. Areas of the abdominal cavity uncovered by peritoneum lead almost invariably to adhesion formation. The omentum is capable of absorbing large quantities of fluid and particles in suspension. Larger particles are attached in a purely mechanical way. The latter is controlled by the action of the diaphragm and intestinal peristalsis. Too much should not be expected from grafts of the omentum. A detached piece of omentum rapidly becomes necrotic and is useless. Only intact portions of the omentum produce serviceable adhesions.

Pathological Bases of Operations for Cancer of the Uterus.—

Speaking of the success which has attended such radical operations for cancer of the uterus as Wertheim's, A. Leitch (*Proc. Roy. Soc. Med.*, 1911, vol. iv, No. 3, Obst. and Gyn. Sect., 69) says that, taking into consideration the impossibility of determining from clinical or histological examination the exact extent of the disease in any given case, we may justifiably conclude that the only way of encompassing a radical extirpation, within reasonable limits of course, is to apply to every case a technic which is designed for the most advanced. Such a technic does not mean a haphazard removal of surrounding tissue, but an extirpation of definite danger zones. These danger zones are the structures which in the autopsies of advanced cases we actually find the most often affected. The paper is devoted to a detailed consideration of these regions.

Wertheim's Abdominal Panhysterectomy.—C. P. Childe (*Proc. Roy. Soc. Med.*, 1911, Vol iv, No. 3, Obst. and Gyn. Sect., 79) presents an analysis of twenty-three personal cases with two deaths, an operative mortality of 8.6 per cent., and of 216 operations by twenty-two other British operators. He believes that for all cases of carcinoma of the uterus, whether of the cervix or body, Wertheim's operation is to be preferred to vaginal hysterectomy because it enables the surgeon to determine by sight and direct touch whether the case is suitable at all for radical treatment, information which he cannot possibly obtain with anything like the same degree of accuracy before operating by the vaginal route. In cases in which the disease has not spread beyond the uterus, and in which alone a comparison with vaginal hysterectomy is possible, the primary mortality is, for all practical purposes, as low as that of the latter operation. All the details are carried out directly under the eye of the operator, and is liable, therefore, to fewer operative risks than vaginal hysterectomy. Cancer is a local disease, and spreads centrifugally from its original focus; it is impossible to say by sight and touch in any given case how far it has already spread; and, consequently, as wide a

removal of tissue in its neighborhood as can be effected with due regard to the patient's immediate safety, and the anatomical possibilities of the region in which the disease is situated, will certainly be more likely to include the whole disease, and as the result of this to give a larger percentage of cures. There is evidence to show that this operation gives a far larger percentage of cures and a much longer lease of life than have been obtainable by vaginal hysterectomy. It may enable cancerous glands to be removed, if present. Though glandular infection, as a rule, is late, it may exceptionally occur early and be capable of removal. It enlarges the fields of operability and enables more advanced cases to be dealt with. This almost certainly saves some lives in these cases, and certainly prolongs life in many others. But in advanced cancer, with the pelvic contents extensively involved, the primary mortality is high; nor are we to expect a large percentage of cures. But it is for these cases the only operation available, and may be recommended where conditions are otherwise suitable. It is in the early cases that the good results are to be expected.

Abdominal Exclusion of the Fundus in Complete Procidentia Uteri.—J. R. Eastman (*Surg. Gyn. Obst.*, 1911, xii., 160) says that no one procedure will fit all cases of prolapse of the uterus. In extreme cases with general relaxation of ligaments, fasciæ and muscles, cystohysteropexy, interposition, and ligament operations do not often suffice to correct the dysuria and dragging pains. It is not a rare experience to find a few months after a simple fixation the abdominal wall sunken in at the site of fixation and the prolapsus returning. Occasionally a well intentioned fixation gives way entirely. In extreme procidentia the sagging bladder cannot be held at its normal level by an ordinary fixation. To remedy such operative defects the writer suggests a procedure which he has found efficient in three cases. The uterine fundus is drawn quite through the abdominal wound, the entire fundus being excluded and secured with a transfixing pin 8 inches long, $\frac{1}{8}$ inch in diameter, the ends of which rest upon the skin lateral to the wound. The pin is allowed to remain in place for two and one-half weeks. In excluding the fundus in cases of complete procidentia, the aim has been to fix the uterus higher than can be done by an ordinary fixation, to provide for firm attachment of the peritoneum, muscles, and aponeurosis at a low level upon the anterior, posterior, and lateral aspects of the uterine body. All of the layers of the abdominal coverings are drawn snugly around the uterine body and sutured to that organ anteriorly, posteriorly, and laterally. Two patients thus operated upon, though they were past fifty years of age, had not passed the menopause and in one of these the uterine appendages were removed and in the other the tubes were divided and the peritoneal screen suggested by Ries interposed. In all three cases the abdominal operation was preceded by curettage, amputation of the portio vaginalis, anterior and posterior

colporrhaphy, and perineorrhaphy. The results in these cases have been better than the writer has obtained in similar cases by other methods. There has been no postoperative dysuria, no residual urine, and no return of the prolapsus uteri. In each case the fundus has been covered over with skin, growing centrally from the periphery within two or three weeks.

Primary Sarcoma of the Appendix.—E. O. Jones (*Surg. Gyn. Obst.*, 1911, xii, 131) records a case of primary sarcoma of the appendix in a woman twenty-six years old who gave a history suggestive of recurrent appendicitis. The head or the cecum was covered with what appeared to be adhesions, which were peculiarly friable, and out of the center of which the appendix was excavated with the finger. As the appendix was being freed 2 or 3 drops of a milky white fluid exuded from the mass. The appendix was of the same peculiar friable consistency as the mass in which it was buried. A simple appendectomy was performed. Microscopic section showed the growth to be a pure spindle cell sarcoma, composed of solid masses of cells, containing large vesicular nuclei, and with here and there a fine fibrillar intracellular stroma. Serial sections made through the appendix and the adjacent walls of the cecum showed the growth to have originated in the submucosa of the appendix, about midway between the base and tip. The cecum was then resected. The writer has collected eight cases from the literature. He says that an accurate diagnosis before operation appears to be impossible. In every case the symptoms were those of some type of appendicitis. Pathologically the round cell sarcoma predominates, next to this, the spindle cell type. Inflammatory changes, either chronic or acute, very frequently accompany the growth. The immediate prognosis and prospect of freedom from recurrence are very good. The fact that primary sarcoma of the appendix may take its origin in an inflammatory process forms a very strong additional argument for the removal of all appendices which show evidence of inflammation.

Large Ovarian Cyst.—J. S. Horsley (*Surg. Gyn. Obst.*, 1911, xii, 115) reports the removal of an ovarian cyst weighing 116 1/2 pounds from a colored woman about thirty-three years of age, whose weight after its excision was 105 1/2 pounds. Rapid recovery was followed by a gain of 35 pounds in two months. The writer cites a collection of twenty-five cases of ovarian tumors weighing 100 pounds or more by Bullitt. Of twenty-two operated upon seven died, a mortality of 32 per cent. This indicates that removal of large ovarian cysts has a high mortality, due not so much to the difficulty of the operation as to the fact that these patients have acquired organic lesions from pressure and are poor surgical risks. In addition to this, the large raw surface often left and the removal of pressure from the abdominal viscera may cause adhesions and obstruction, or may interfere with the function of the abdominal organs to a fatal extent.

Causation of Tuboovarian Cysts.—G. Resinelli (*Rendiconti d. Soc. Toscana di Ostet. e gin.*, Trimestre 2, 1910) discusses the causation of tuboovarian cysts. They have been generally considered as due to and a part of inflammatory and neoplastic lesions of the adnexa. In a certain number of cysts, etiology, pathogenesis, clinical symptoms, and anatomio-pathological form show that they are of another origin. A case of this nature is recorded in which the ovary was reduced to a simple portion of the sac wall. The uterus showed several small subserous fibromata and a cystic sac on its posterior face entirely distinct from the broad ligament. Such a cyst is extremely rare. It has no walls except the layers of peritoneum covering the uterus. The author thinks that there is a group of cysts derived from the hydrops of a proligerous cyst. Another group is of inflammatory origin; among them are pyosalpinx, hydrosalpinx, and adhesions of the walls of the tubes by inflammation. In a third group are primary tuboovarian cysts. A factor in their production is pelviperitonitis of tuberculous nature, or caused by the diplococcus; this is cured and leaves complete adhesion of the tube and ovary. The tube becomes distended, and the ovary atrophies leaving the cyst.

Echinococcus Cyst of the Broad Ligament.—Raffaele Minervini (*Gior. internazionale d. sc. med.*, Jan. 15, 1910) records a case of primary hydatid cyst of the broad ligament, a location that is rare for this species of cyst. The parasite cannot reach this location through the intestine in the ordinary way, but must come by the blood current. The diagnosis is ordinarily very difficult. In most of the cases published the cysts are located on the uterus and ovaries, few on the tubes or broad ligaments. In the author's case the cyst was very large and a diagnosis of tubercular peritonitis was made.

ITEM.

The Seventeenth International Congress of Medicine will meet in London in the summer of 1913. The exact date is to be fixed by the International Permanent Committee, which will assemble for the first time in London, 21 and 22 April next, under the presidentship of Dr. F. W. Pavy.

At the same meeting the list of Sections of the Congress will be arranged. Any wishes or propositions concerning this list may be sent, up to the first of April, to the Hon. General Secretary of the Permanent Committee, Prof. H. Burger, Vondelstraat 1, Amsterdam, or to the Bureau of the Committee, Hugo de Grootstraat 10, The Hague.

The Committee will be glad to receive, before the same date and at the same addresses, propositions concerning the organization of the Congress.

DEPARTMENT OF PEDIATRICS.

ORIGINAL COMMUNICATIONS.

EPIDEMIC INFANTILE PARALYSIS AND ITS CONTROL BY THE STATE AUTHORITIES.*

BY
B. SACHS, M. D.

IN the summer of 1907 the inhabitants of New York and its vicinity were startled by the appearance of the epidemic form of infantile spinal paralysis. With the assistance of an alert public press all manner of extravagant reports regarding the ravages of this disease were soon sent broadcast. The public at large received the impression that a previously unknown or little known disease had come upon us. Before long the fact became apparent that this special epidemic disease was well-known to the medical profession, particularly to neurologists and pediatricists, that it was a disease known as anterior poliomyelitis or infantile spinal paralysis, a disease which in spite of its somewhat misleading name may affect adults, although by far the largest number of its victims are infants and children of immature years. To medical men the disease was known for the paralysis and the crippling deformities with which the victims were so often afflicted. Many years ago those of us who were in charge of hospitals and dispensaries had observed the seasonal occurrences of the malady, the early spring and summer months being the periods of the year in which the onset of the disease had been most commonly observed. Some ten or fifteen years ago the opinion was hazarded—among others, by the writer—that the disease should be considered one of the infectious diseases of childhood, but this opinion did not gain a firm foothold until the epidemic occurrence of the disease in Norway and Sweden in the late nineties and the early years of this century. Thereafter a more careful review of the entire subject showed that earlier epidemics had been reported in Europe and in America. Holt and Bartlett¹ claim that the first epidemic occurred in West Feliciana, Louisiana, in 1840. These same authors have, on the

*Read before the Society of Medical Jurisprudence, March 13, 1911. The reader will kindly note that this Society is made up of medical and lay members.

¹ *Am. Jour. of Med. Sciences*, 1908, i, page 467.

whole, been able to enumerate thirty-five epidemics. Starr¹ was able to collect forty-four, many of them, however, relating to occasional small outbreaks of the disease that had occurred from time to time in France, Italy, Germany, and the United States.

The epidemics in Norway and Sweden, which have been studied by a number of very able investigators, and above all by Wickmann,² have added much to our knowledge of the epidemic form of infantile paralysis. But we were not fully alive to the importance of the subject until the epidemic in Greater New York in 1907, which led to a careful study and analysis of at least 800 cases out of a possible 2,000 or 2,500 which were supposed to have occurred in the greater city at that time. Soon after a special committee, appointed by the New York Neurological Society and the Pediatric Section of the New York Academy of Medicine, of which I had the honor to be Chairman, started upon its investigations.³ The Massachusetts State Board of Health took up the same subject, studying the epidemic as it occurred in that state. Both of these committees have, no doubt, supplied a considerable amount of information regarding the clinical peculiarities of the disease.

With the clinical aspect of the case I take it that this Society is not specially concerned. It may be of some interest, however, for even laymen to know that the disease, as it has become known to us through the study of these epidemics, is a very different affair from the disease as it was pictured to us and made familiar to us previous to these epidemics. To instance only one point, no medical men had ever thought of anterior poliomyelitis except in terms of the paralysis and deformities resulting therefrom, whereas the study of the epidemic form has convinced all of us that the disease may occur at any time without exhibiting paralysis. Whereas we were formerly of the opinion that the paralysis, if once established, was more or less permanent for the remaining years of life, we now know that some of the cases in which paralysis occurs in the earlier periods of the disease may recover to such an extent as to bear no trace in later years of any paralytic disturbance. The public at large should be informed of this fact so as to counteract to a degree the uneasy feeling that has taken possession of the public wherever the disease has appeared. While I must concede that the disease

¹ *Jour. Am. Med. Assoc.*, July 11, 1908.

² *Beiträge zur Kenntniss der Heine-Medinscher Krankheit*, Berlin, 1907.

³ *Epidemic Poliomyelitis*. Nervous and Mental Disease Monograph Series, No. 6, New York, 1910.

in its severer forms is a most unfortunate affliction, there is enough of the optimist in me to lay special stress upon the fact that in the course of every epidemic a large number of unusually mild cases have been observed, and that even some of those which have appeared to be of a considerable degree of virulence have resulted in complete recovery. This optimistic view of the disease is neutralized by the knowledge we have also gained from these recent epidemics that the disease may prove rapidly fatal in some instances. As was stated in the New York report, "It is a more fatal disease than was supposed, and yet recoveries are more common than was suspected."

The epidemic as it occurred in New York gave a great impetus to the careful study of the disease in this country and was directly responsible for the careful studies on the epidemiology of the disease which were carried on in experimental fashion by Dr. Flexner at the Rockefeller Institute and by Strauss of this city. Although Landsteiner and Popper, and several other German authors, had busied themselves with the same subject and in some points had anticipated Flexner's findings, yet his work has been so thorough-going, and perhaps so startling, that our present knowledge of the possible methods of contagion is based almost entirely upon the work done in this city at the Rockefeller Institute.

Without wearying you with details, the questions of paramount importance are: Is the infectious character of the disease positively established? How is the disease communicated from person to person, and can the spreading of the disease be checked or controlled?

First: In a general way, the epidemic occurrence of any disease is sufficient to prove its infectious or contagious character. After the ravages of the disease in Norway and Sweden, the largest epidemic occurred in New York and along the Atlantic Coast. From here it was evidently carried to the adjacent towns along the Hudson and to New Jersey, to Massachusetts, and was also carried to the Northwest, particularly to Minnesota, one author supposing that the large number of Swedes settling in that region had been responsible for the carrying of the disease from Sweden to the Atlantic Coast, and from the Atlantic Coast to Minnesota. In 1908 the epidemic reappeared, but to a far lesser degree. In 1909 its ravages were particularly noticeable in the Brownsville section of the greater city, and last summer several well-marked epidemics occurred in the Adirondack

region, Lake Placid, and in Keene Valley. It had come to this region in all probability from Canadian centers.¹

The disease as it occurred in New York was carefully studied by a special committee, and in particular by Dr. Bolduan, of the New York Board of Health, whose charts, with the cases spotted according to the residence of the patients afflicted, proved of considerable interest. The occurrence of several cases in one and the same family, or in one and the same house, and the massing of cases in certain districts of the city were also sufficient proof of the infectious character of the disease.

In the study of the disease as it occurred in Sweden, Wickmann showed that the schoolhouse appeared to be the most prolific source of infection, and most of the cases which occurred could be traced either to the schoolhouse itself or to persons who had been in communication with the school building. Without being a violently contagious disease, it is evidently one which can be easily communicated from person to person.

As Bolduan² well stated: "The degree of infectivity does not necessarily correspond to the degree of virulence. The virulence of an infection can be measured not only by the mortality of the disease, but also, in many instances, by the proportion of adults affected and by the period of incubation. Since adults have more resistance to infection than young children, a large proportion of adults cases usually indicates a more virulent infection. Thus, an epidemic occurred in Rutland, in which not only a large number of adults were attacked, but there was also a high mortality, viz., eighteen out of 132. Of the seventeen cases in St. Mary's, one was twelve years old and one twenty-one. The average age was five years and there was only one fatal case. In the Swedish epidemic of 1905, the proportion of adults was considerable and the mortality was over 12 per cent. In our own epidemic of 1907 a very small number of adults was affected, suggesting that the infection was of a mild type. The mortality was also relatively low. So far as the New York Committee could determine, it was said that the mortality was not over 5 per cent.

While Wickmann was justified in attributing the spread of the epidemic to school infection, it is significant that the epidemic in New York occurred at a time when the schools were closed. The attempt to prove for New York City the exact

¹ The natives and not the summer visitors from the large cities were the first to be affected, as Dr. T. C. Janeway was kind enough to inform me.

² *New York Report.*, page 23.

way in which the epidemic originated has been unsuccessful. The New York Committee were not even certain that the disease had been communicated from across the ocean, but as the disease is always present with us, sporadic cases occurring at all times, we are face to face with the problem, as we are in cerebrospinal meningitis, why the disease at certain times takes on an epidemic character and at other times remains only mildly infectious. All doubt as to the infectious character of the disease has been removed by the experimental investigation of Flexner¹ and others, to which I have referred. The facts have now been established beyond doubt that the disease can be communicated from man to animals by the inoculation into the cerebrospinal canal of monkeys of an emulsion of the spinal cord of a child that had been a victim of the disease, and the infection has been successfully carried through a series of monkeys, the exact disease being reproduced in each series. While the virus has thus been transferred, in the first instance from man to animal, and from animal to animal in later series, the exact nature of the virus has not yet definitely been determined. The only facts that have been established so far are that the virus is conveyed by some extremely minute and filterable organism, the life history of which has not yet definitely been established; but though it is still an unknown quantity some of its peculiarities have been learned, so that we may hope at no very distant day to be in possession of all the facts regarding the character and peculiarities of this infectious virus.

After writing the above, the Department of Health of the State of Pennsylvania report that Drs. Dickson, Fox and Rucker² have found an organism in the blood of acute cases of poliomyelitis which they evidently believe may prove to be the true carrier of the disease, but they have as yet not been able to isolate the organism nor to propagate the disease by means of it, and further proof will be needed before a relation of this organism can be established beyond the possibility of a doubt.

It is almost self-evident that an early diagnosis of the disease is an essential factor in the discovery of the organism causing the disease and in the attempt to check the spreading of the contagion. The difficulties of the situation are increased by the occurrence of a number of unusually mild and of abortive cases—the cases without paralysis and with but slight fever and malaise.

¹See Flexner's publications in the *Jour. Am. Med. Assoc.* for 1910 and 1911.

²*New York Medical Record*, March 11, 1911.

It has now been established that in suspected cases an early examination of the cerebrospinal fluid, gained by tapping the spinal canal, will throw light upon the acute character of the infection. In monkeys successfully inoculated with the virus of poliomyelitis, Flexner and Clark maintain that there is an increase in cells and in the protein which reaches the maximum before the onset of the paralysis. At the very beginning of the disease the fluid is not clear but slightly opalescent, whereas, if examined only a few days later, the fluid is apparently normal in color, and for that reason gave rise to the earlier opinion that nothing was to be gained by an examination of the cerebrospinal fluid. By means of such an examination which should be made by trained physicians, the disease can be recognized directly the first signs of an infection have appeared. In this work the State authorities should lend a helping hand. These laboratory methods are already beginning to bear fruit not only in the matter of diagnosis but in respect to the treatment as well. Allusion to this may be in order even before this audience.

Following the example of Cushing and Crow, who have administered urotropin to produce a disinfection of the cerebrospinal fluid, Morris of Baltimore and others have thought of using it in epidemic poliomyelitis. Flexner and Clark state that "when the virus of poliomyelitis is injected into the cranial cavity of monkeys in which the urotropin is already present in the fluid, and the drug is administered by the mouth daily thereafter, that in a certain proportion of animals so treated, if not in all, the incubation period of the disease is prolonged from six to eight to twenty-four days, and next the onset of paralysis is entirely prevented. When the drug is given by mouth and the immune monkey serum by injection into the subdural space, the paralysis can also be prevented and possibly with greater certainty." It can be readily seen from this that if these investigations are carried only a little further, we shall be able to establish some sort of drug control over the virus of epidemic poliomyelitis. To achieve the production of an immune serum would be a still greater victory, but this is for the future.

In answer to the second question which we have postulated, as to the manner in which the disease is carried from person to person, only a few facts are known. First: It is definitely established that the disease is not violently infectious or contagious, for during the epidemic occurrence of the disease in this city the children afflicted with the disease were kept in general

hospital wards and not a single one of the other inmates of the wards of the hospital was afflicted with the disease. On the other hand, the fact that several children of the same family were stricken with the disease in the course of the epidemic proves the existence of a common contagion. It is very possible that in this disease, as in other infectious diseases, as, for instance, in cerebrospinal meningitis and in typhoid fever, apparently healthy persons may be the carriers of the disease. So far as any evidence has been gathered, there is some reason to believe that the organisms carrying the infection remain for a long time in the nose and throat of the affected individual.

Flexner and Clark in their latest article report that in monkeys the virus of epidemic poliomyelitis passes from the meninges into the mucous membranes of the nose and that infection can be readily achieved by bringing the virus into contact with the scarified mucous membrane. This has suggested to them that the naso-pharynx acts in human beings as the portal of entry of the virus into the central nervous system and is the source of its dissemination to other human beings.

They could not state anything definite as to the habitat of the virus in nature outside of infected persons. Osgood and Lucas¹ have shown that the virus can survive in the naso-pharynx of the monkey for nearly six months and long after the acute stage of the disease has passed. If this is the case we can see how readily persons apparently well may be the carriers of the disease. In the nervous system itself the virus has not been detected after the lapse of three or four weeks, and in many cases only during the first few days following the paralysis. Flexner and Clark suggest that monkeys successfully inoculated become, in some instances, after recovery from the effects, passive carriers of the virus. Whether the same fact will prove to be true of human beings remains to be determined. At all events, this line of investigation has been successful enough to make it incumbent upon physicians during the time of an epidemic to pay special attention to the nose and throat of children, and the question is whether the medical officers visiting our public schools should in such times give directions for the general and frequent disinfection of children's throats. Such precautionary measures as these may not find immediate acceptance, but personally I feel confident that preventive measures of this sort will have to be adopted and if adopted will prove beneficial.

How are the state authorities to assist us in combating the

¹ Quoted by Flexner and Clark. *Jour. Am. Med. Assoc.*, Feb. 18, 1901.

disease? First of all, let them waste no time on matters of purely clinical value. That work has been as well done by the New York Investigation Committee as it will be done by any similar body of men. It took nearly two and a half years to do it, its work has received the endorsement of capable men both here and abroad, and, to repeat, this work would be entirely useless. On the other hand, the state authorities should consider the manner in which the disease spreads from town to town.

Epidemics in rural districts can be studied with even greater ease than those in congested centers. With the first announcement of an epidemic or a suspicion of it thoroughly trained men should be sent to the infected district to do the necessary work. The state should establish or should designate laboratories in various parts of the state which can be appealed to by rural or city practitioners for the corroboration of an early diagnosis in all suspected cases. The health officers of the state would do well to issue a circular giving the important facts as to the features of this epidemic disease, for a large number of the practitioners are still in the dark regarding it, and urge lumbar puncture—a tapping of the spine—in suspected cases, and the sending of the fluid thus obtained to one of the designated state laboratories. The health officer should bestir himself, if he has not already done so, before the summer is upon us. In all human probability there will be a reappearance of the epidemic in some part of our state. The state and city authorities should for the present insist upon a report being made of every single case that occurs either in the practice of physicians or in hospitals, and should, furthermore, insist upon immediate isolation of such patients, other children being kept at a distance from the seat of infection. Until we have more definite knowledge regarding the exact manner in which the contagion is spread, it would also be wise to close the schools in case one or more children had been stricken with the disease. It is a fact worth noting that smaller epidemics of this disease have occurred at several of our colleges.

In spite of the severity of the disease in some instances, I wish, in concluding, once more to lay stress upon the fact that there is no reason for the public to be panic-stricken regarding this disease. The fatal cases are, after all, entirely exceptional, the mild ones are much more numerous than we had any reason to suspect, and those of moderate severity can be considerably improved by patient and diligent treatment.

THE CONTAGIOUSNESS OF ACUTE POLIOMYELITIS.*

BY

I. STRAUSS, A. M., M. D.,

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IN 1890 Medin surprised the medical world by a description of acute poliomyelitis in its epidemic form which varied very essentially from the classical picture of Heine. He recognized many of the clinical types with which we are to-day familiar, and also acknowledged its infectious character. As to its contagiousness he expressed himself as follows: "that poliomyelitis is to be differentiated from contagious fever diseases in that the patient does not seem to spread the infective material in his surroundings. In none of the already described epidemics has it been observed, although a direct contagion cannot be absolutely excluded. It appears most improbable that the virus is contagious. It appears as if the virus exists outside of the human being and depends upon accidental external circumstances as to whether one coming in contact with the virus is susceptible."

In 1907 Wickman, his pupil, published his monograph entitled "Beitrage zur K. der Heine-Medinschen Krankheit," and for the first time advanced the view that acute poliomyelitis was a contagious disease. In his study of the Swedish epidemic of 1905 he discovered that in addition to the group of cases suffering from more or less typical paralyses, there was a class of cases which appeared to be afflicted with poliomyelitis but without paralysis. These cases he designated as abortive. This type had not been observed by Medin. He furthermore called attention to the possibility of there being so-called "carriers" of the disease, *i.e.*, individuals who while not themselves afflicted with poliomyelitis were transporters of the virus to susceptible

* Read before the Academy of Medicine (Section on Neurology and Psychiatry), March 14, 1911.

persons. The rôle which the carrier plays in infectious diseases was probably unknown to Medin.

Wickman also called attention to the fact that cases of poliomyelitis occurred in groups and that the spread of the disease seemed to be radial from such groups.

The recognition of the abortive type and the carrier has furnished Wickman the connecting links upon which to base the theory of contagion.

The abortive cases are classified according to the symptoms under four headings:

1. Those which present the clinical picture of a general infection.
2. Those in which there are symptoms referable to meningeal irritation (meningismus).
3. Those in which pain is a predominant symptom, and resembling influenza.
4. Those in which there are marked gastrointestinal symptoms.

To summarize, these cases begin with fever which as a rule is not very high (38 to 39° C.), headache, malaise and unusual prostration, and in addition pain and stiffness in the neck and back, pain in the limbs, nausea, vomiting or diarrhea may be added. There may be also a slight transitory weakness in groups of muscles or temporary loss of the deep reflexes. The marked weakness and prostration which afflicts the patient after the attack is as a rule disproportionate to the severity of the symptoms.

This brief clinical description shows that there is nothing characteristic about these cases, and Wickman admits that the diagnosis of the abortive cases can only be made when they occur in connection with genuine cases and especially during an epidemic. Last fall, however, Netter and Levaditi showed that the mixture of the virus of poliomyelitis and the serum of a suspected abortive case when injected intracerebrally in monkeys did not cause paralysis, while the control monkeys became ill with typical symptoms of the disease. Anderson and Frost have recently reported a similar experiment carried out with the serum of nine suspected abortive cases, with the result that six or 66.7 per cent. of the cases showed that the serum possessed the same germicidal action as the serum of a typical case of poliomyelitis. They also showed that normal human serum may possess germicidal properties for the virus but in lesser degree than the sera of abortive or frank cases. We thus have some

though not conclusive experimental evidence in addition to the clinical and epidemiological that the abortive cases are true cases of poliomyelitis.

The important rôle which the abortive cases play in the epidemiology is illustrated by the statistics which Wickman furnishes of the number of cases occurring in one house. He has records of 1,031 cases. When the abortive cases are included, he finds that 627 houses had one case and 156 houses had two or more cases. If the abortive cases are eliminated, there remain only ninety-seven houses in which there were more than one case. He believes, however, that because of faulty observation many abortive cases were overlooked in the study of the epidemic as a whole, and he cites the figures of two small localized centers which came under his personal observation—namely, Trästäna and Atvidaberg. Including abortive as well as paralytic cases in these two districts, there were sixteen houses with one case and twenty-two houses with at least two cases; or expressed in percentage, the relation was 42.1 per cent. as compared with 57.9 per cent. If the abortive cases are omitted, then there are twenty-six houses with one case and seven houses with at least two cases; that is, 78.8 per cent. as against 21.2 per cent. These figures show that in considering the question of contagion, omission or inclusion of the abortive cases alters the complexion of the epidemic. The abortive cases are also of great importance in tracing the connection between paralytic cases, and it is possible that the failure to recognize them is responsible for our overlooking the connection between individual cases in previous epidemics.

The epidemic at Trästäna reported by Wickman is generally pointed to as a convincing example of contagion. It is a parish which contained 500 people, away from the main line of communication and travel and about twelve square miles in extent. In a period of six weeks there occurred forty-nine cases, including both paralytic and abortive cases, among eighteen families. The source of infection of the first case is unknown. The child became ill on June 28, but attended school from July 2 to July 12, the disease broke out in seven families and among those infected in each family was a child that had been at school. From July 14 to July 27 five other families whose children attended the school had cases, but these school children were unaffected. It had been assumed that these children played the rôle of secondary carriers. Three other families had cases developing from July 23 to August 5, but since no child from them had gone

to school it was assumed by Wickman that the infection was brought from one of the other families. And finally two other families had four paralytic cases between them which developed between July 20 and July 29 and no connection between the school or the other families could be proven.

The school was closed two days after the first case developed. The inhabitants in this small district lived in little farms at some distance apart and had very little communication with each other. Each had its separate water supply, its own cows and provisions were brought from a district in which poliomyelitis had not made its appearance. At first glance this small circumscribed epidemic appears to be a convincing example of contagiousness, but there are certain features of the outbreak which require explanation. In the first place, in the seven families whose children came into contact with the original source of infection in the school and were afterward ill, the periods of incubation were respectively four, five, six,⁽²⁾ ten, twelve and fourteen days. Wickman considers the period of incubation to be four days, others think it six or seven. Three of the cases exceeded the hypothetical period by a number of days. In six of the families the children who attended school did not become ill, and the period which elapsed between their exposure to the contagion and the appearance of the disease in their brothers or sisters was sixteen days, seventeen,⁽²⁾ twenty, twenty-three and twenty-five days. In order to explain this contagion Wickman is compelled to assume that healthy persons can act as carriers of the virus and transmit it to susceptible individuals. There are, however, two families with four cases which did not come into contact with the original case and yet while Wickman states that one of the elements proving contagion from the school case was that these people had very little intercourse between themselves, and hence acquired the infection from one source, nevertheless assumes that very intercourse to explain this one break in the chain of contagion.

The virus of poliomyelitis was carried according to Wickman, to the neighboring parish of Hjälsstad which likewise contains 500 inhabitants living under the same hygienic conditions as prevail in Trästena except that the population is more congested, a more favorable condition for contagion. Nevertheless, there developed only six cases which were distributed among three families. It appears to us that this is difficult of explanation from whatever point one regards it.

Wickman has described other groups of cases in which the infection was carried as a contagion either by abortive cases or else by carriers, but the Trästena epidemic is the most convincing example of the spread by contact.

Müller, in his investigation of the epidemic in the province of Hesse-Nassau, Germany, in 1909, was the first to confirm Wickman's theories of the epidemiology of poliomyelitis. He had records of 130 cases of which he utilized 100 for statistical purposes. He found instances of transmission of the disease from person to person but more often of transmission through carriers. In fact, he believes that direct contagion is very unusual. One of the examples of secondary contagion is the following: a family in Frankenau, where there had been no previous case of poliomyelitis was visited about September 11 by two healthy women from the neighborhood of Arnsberg, where the disease was epidemic. Two boys in this family became ill, one with paralysis and the other probably with the disease in the abortive form. Later on a neighbor's child who had been playing with them became ill with poliomyelitis and was paralyzed, and the three months' old nursing child of the teacher who lived in the school-house frequented by these children developed the disease. Müller also gives instances where healthy children have visited infected districts and upon their return home have developed the disease and become a source of infection for their environment. Müller thinks that the proof of carrier infection must often be wanting especially in congested districts.

Eichelberg, in studying the Hanover epidemic of 1909, came across two instances where the children of shoemakers developed poliomyelitis in nine to ten days after their fathers had soled the shoes of children who had developed the disease. He, furthermore, found that out of thirty-four cases the fathers of five were shoemakers, and he advanced the theory that possibly the virus lay in earth. Müller followed up this matter and offers the following table of occupation of the fathers whose children became infected. So far as I am aware, this is the only table of the kind which has thus far been published.

Mechanics:

Shoemakers, 6; carpenters, 2; masons, 2;
 painters, 2; roofers, 2; tailor, 1; glovemaker,
 1; baker, 1; lithographer, 1; chimney sweep, 1;

locksmith, 1; wheelwright, 1; stone cutter, 1; turner, 1	23
Laborers	19
Farmers	8
Stable-keepers and boys	7
Innkeeper and waiters	4
Railroad men, letter carriers	4
Teachers	2
Minor officials and officers	2
Servants	2
Book dealer	1
Shopkeeper	1
Thresher	1
	75

Müller believes that the virus may be transmitted by infected dirt either through clothes, including shoes, or by other objects which have come in contact with dirt.

The Nebraska epidemic reported by Shidler is the next epidemic in which apparently there was spread of the disease either by direct contagion or else by carrier. The center of the infection was at York, and Shidler considers that the epidemic was carried throughout the state by persons visiting this town for a fourth-of-July celebration. Here, as in the New York epidemic of 1907, the schools played no part since they were closed at the time. It is noteworthy of this epidemic that Shidler makes no mention of abortive cases and that he traces the infection either directly from one paralytic case to another or else by the intervention of carriers. The Nebraska epidemic was also exceptional in the number of paralyzed cases occurring in some families.

Armstrong has described a small epidemic of seventeen cases occurring in North St. Paul, in August, September and October of 1909. North St. Paul is a village of 1,400 people situated eight miles from the center of St. Paul, Minn. He has worked out these cases much in the same manner as Wickman did the Trästena epidemic and by considering certain cases of illness of ill-defined type to have been abortive cases and the use of carriers; he likewise finds considerable connection between the cases and evidence of contagion. In analyzing his list of cases just as in the case of the Trästena epidemic, while on the surface it appears conclusive that we are dealing with contagion, until

we have an absolute clinical test for the abortive cases and until we are certain of the carrier, we are justified at least in assuming that there may be an element of coincidence in the development of the cases or that there may be some method of spread other than contact. We are somewhat justified in this view by the observations made on other epidemics by those who were conversant with Wickman's views and his work.

Piper describes an epidemic of fifty-one cases in Vorpommern in 1908. The mortality was 17 per cent. and indicates a virus which was exceptionally virulent and one which we should expect would certainly spread by contact. Yet Piper states there was no instance of more than one case in a family nor any instance in which a case could be traced to a previous one. Hill in his report of the Minnesota epidemics noted sixty-nine families affected primarily and only eight secondary cases. Zappert reports the 128 cases occurring in Vienna in 1909. He noted the occurrence of the cases in groups, a fact to which Wickman had called attention, but he could not trace the radial spread of the epidemic which Wickman has noted. He found, however, that the bezirk or ward which contained the poorest people and the one which contained the densest population had very few cases. He also noticed that the early cases appeared simultaneously in different parts of the city in July and August. Only eight cases of infection in the same family occurred and only occasionally was there infection of neighbors. He does not consider that transmission of a case from one place to another can occur. His conclusion is that he can only partly confirm Wickman's theory of contagion.

Furntratt has reported an epidemic of 433 cases with a mortality of fifty-seven or 13.16 per cent. which occurred in Steiermark, Upper Austria, in the summer of 1908. Graz lies in the center of the infected district and had at that time a population of 160,000 inhabitants and yet there were only fifty-four cases in the city. The nearby town of Leibnitz with a population of 2,600 had nineteen cases. On the basis of a comparison of population of Graz and Leibnitz, the former should have had 1,200 cases of poliomyelitis. One isolated mountain village had two cases, while the town of Mürztal, which is a center of commercial and industrial activity, remained free. Twelve of the cases developed in neighboring houses and at about the same time. Two cases developed in children who had lain on the bed which had been occupied by a case of poliomyelitis. There was one

family in which six children became successively ill during September. No case could be traced to a school infection. In the foundling asylum of Waldstein a number of children came down with the disease at the same time and after three weeks one more child was taken ill. In the Anna Children's Hospital in Graz fresh cases of poliomyelitis were constantly being brought in from the hospital and yet no case of house infection occurred. Furntratt states that at the time of the epidemic he had read Wickman's work and was prepared to recognize the various types of the disease and substantiate Wickman's views. Yet he could not determine the radial spread of the epidemic. He considers that simultaneous infection of a whole neighborhood is the rule and subsequent infection of relatives and neighbors is rare.

The report of the investigating committee of the New York epidemic of 1907 furnishes very little epidemiological data of value. This was partly due to the occurrence of the epidemic in the congested part of a large city where it is always difficult to trace paths of contagion and partly because the investigation was undertaken after the epidemic had ended.

From the epidemiology we have thus far reviewed one gains the impression that the weight of evidence favors the view that poliomyelitis is contagious. There are, however, some facts which can only with difficulty be harmonized with this conception.

We have already noted that Graz, a city in the center of an infected district, had very few cases, and that in Vienna the wards which we would have expected to be the center of contagion were free. But Wickman himself calls attention to a similar condition in Sweden. In the 1905 epidemic there were 959 cases in the country and only seventy-two cases in the cities. The city of Vexjö had only four cases although it lay in the center of a district in which several hundred cases occurred. Örebro, a city of 25,000 inhabitants and likewise the commercial center for the surrounding country in which there were a number of cases, had only five cases. In our own epidemic of 1907, while it was shown that the disease spread along the highways and lines of travel just as it did in Sweden, yet Brooklyn and East New York remained comparatively free. When in 1909 the epidemic had its center in East New York, Manhattan and especially the Bronx which are closely connected by social intercourse with East New York had comparatively few cases.

Wickman also notes that the Swedish epidemic did not spread

over the whole land, but occurred in either large or small areas respectively and between them there were free areas. This was not due to the uneven distribution because that part of Sweden which contained from one-fourth to one-fifth of the entire population and was the most congested, had only thirty-one cases.

Wickman describes one group of cases where he feels compelled to ascribe the infection to milk, because a number of people became ill with poliomyelitis on one and the same day and all were supplied with milk from the same dairy.

Another important fact which we learn from the epidemiology and one which must be considered when either contact or carrier contagion is discussed, is that there is no recorded instance of secondary cases (except the Waldstein case above cited) developing in a hospital. Epidemic cerebrospinal meningitis which it is known is spread by carriers, does occasionally infect secondary cases in hospitals or institutions.

It is also significant, as Müller points out, that despite the contagiousness of the disease and the intimate relations existing between the members of a family that in families with a number of children it is exceptional to have more than one infected. Wickman mentions one family in which there were eight children and yet only the father became ill with poliomyelitis. Poverty and the usually accompanying unhygienic conditions do not seem to affect the spread of the disease.

In many instances in order to explain the contagiousness of the carrier it must be assumed that the virus is carried by him for a long time in a viable and virulent state. Osgood and Lucas have shown that this possibility exists in monkeys but the applicability of their observations to man remains to be proven.

We have now to consider what experimental evidence there is which points to the contagiousness of poliomyelitis. The knowledge which has been gained from experimental research is of equal importance to the facts of epidemiology in throwing light upon this question. The nature of the virus and the mode of infection bear an intimate relation to the question. The virus belongs to the group of filterable viruses, such as rabies, yellow fever, foot and mouth disease and possibly dengue. It is more easily filterable than rabies, passing not only the Berkefeld but the Chamberland and Reichel filter as well. One only of these viruses is transmitted by air contagion, viz., foot and mouth disease, which primarily is not a disease of man. Rabies is transmitted by the saliva of the infected animal, *i.e.*, by his bite,

yellow fever by the bite of the *Stegomyia fasciata*, and dengue, according to Ashburn and Craig, by the *Culex fatigans*. Vaccine likewise is a filterable virus and is only transmitted by inoculation accidental or otherwise.

The virus of poliomyelitis preserved in normal saline solution has been frozen and kept at 0° C. for eleven days without losing its virulence. This fact is of significance when we remember that epidemics of poliomyelitis invariably end in November or as soon as cold weather sets in, although sporadic cases have been noted during the winter months. The virus has remained virulent for fifteen days at least, when dried in a vacuum over sulphuric acid and for twenty-four days at least when dried over KOH according to the Pasteur method. When, however, it is spread in a very thin layer and kept at thermostat temperature for four hours or at room temperature for twenty-four hours it becomes inactive. The influence of light in this last experiment was not noted. It is killed at 40° to 50° C. after thirty minutes. The effect of heat or cold upon the virus does not throw much light on the question of contagion except in so far that it shows that the virus can tolerate both and some other cause must be sought to explain the limitation of epidemics to the summer months.

The virus resembles rabies in that it travels along the lymph channels of the nerves to the central nervous system for which it has a special affinity. The determination of the path of invasion has been the object of much experimental work, and of course is of great importance from the standpoint of epidemiology. Flexner and Lewis were the first to show that the scarified mucous membrane of the nose of the monkey would transmit the virus. Lewis and v. Wiesner have shown that when the virus is rubbed into the nasal mucosa without scarification, or when it is placed in the trachea or bronchi, and lastly when fed by catheter, the monkeys become paralyzed. They further drew attention to the important fact that the part of the nervous system which corresponded to the site of infection was first affected, as if the virus had traveled along the lymph channels of the nerves supplying the infected area. In fact, Landsteiner and Levaditi have injected the virus into the nasal submucosa and proved that the virus traveled along the olfactory nerve to the brain. Flexner and Lewis also found that the virus was present in the nasal mucosa of monkeys ill with poliomyelitis and recently Osgood and Lucas proved that the filtrate of the nasal mucosa

of two monkeys dying without other discoverable infection, respectively six weeks and five and a half months after the acute stage, was capable of transmitting the disease. The presence of the virus in the nasal mucosa of monkeys and the experimental production of the disease through nasal inoculation has led to the widely accepted view that the nose is the portal of entry in man and possibly Osgood and Lucas' observations will serve to substantiate the theory of human carriers. Flexner and Lewis have gone so far as to draw a comparison between the modes of infection as it occurs in epidemic cerebrospinal meningitis and in poliomyelitis. In making this comparison they have overlooked the very important fact that meningitis occurs almost exclusively during the winter months when catarrhal conditions of the nasopharynx are prevalent, whereas poliomyelitis occurs during the summer months when nasopharyngeal inflammation is the exception, although occasionally a case of poliomyelitis commences with an angina or tonsillitis. All observers, including Wickman, mention the absence of catarrhal conditions of the throat or nose. Landsteiner and Levaditi assert that the line of argument of Flexner and Lewis in favor of their hypothesis of nasal contagion fails in one most important detail, namely, the determination of the virus in the nasopharyngeal mucus. Landsteiner and Levaditi attempted this by injecting a *Macacus* with mucus from a monkey ill with the disease, but with negative result. They also inoculated a monkey unsuccessfully with nasal secretion from two men who had been ill with poliomyelitis, one six weeks and the other some months previously. They also conclude that nasal infection in monkeys cannot be very easily accomplished because they failed to inoculate a chimpanzee and many other lower apes by smearing the virus on the nasal mucosa or the back of the throat or by depositing it in the nasal passages on cotton tampons. Stannesco has shown that many of the monkeys kept in captivity have ulcerations in the nose and this may facilitate the entrance of the virus. Another weakness in the argument for nasal infection lies in the fact that no observer has ever seen a monkey acquire poliomyelitis spontaneously, despite the fact which must be admitted by all that the monkey is very susceptible to the virus, even more so than man is. Leiner and v. Wiesner kept a monkey in the cage with paralyzed monkeys for fifty-two days without his acquiring the disease.

It appeared to me that if the virus of poliomyelitis was present in the nasal mucosa, and if there was ground for the Flexner and

Lewis comparison to epidemic cerebrospinal meningitis where the meningococcus can be obtained culturally from the nose, not only in those ill with the disease, but in carriers as well, that we should be able to isolate the virus from the nasopharynx of human beings. Accordingly, last August I visited Springfield, Mass., during the epidemic and took swabs from cases in different stages of the disease.

These swabs were passed into the nasopharynx by way of the mouth in a dry state and when removed always had considerable secretion attached to them. Once or twice they were a little blood tinged, showing that they had come into intimate contact with the mucosa. They were then placed in sterile bouillon or salt solution in which the virus had been shown to retain its virulence and kept either at room temperature in the dark or on ice. The swabs were squeezed to remove all the virus they might hold, the solution filtered either through a Berkefeld or Chamberland filter and either 2 or 4 c.c. of filtrate inoculated intracerebrally into monkeys. The quantity of virus present did not have to be large for Leiner and v. Wiesner have shown that a cord emulsion of 1-1000 or 1-500 is more potent than stronger mixtures. There were ten cases in all, and the swabs were taken both during and following the febrile stage. Some of the swabs were kept in bouillon for two or three days, others were used for inoculation a few hours after they had been in the nasopharynx. None of the monkeys acquired the disease. These experiments seemed to indicate that the virus could not be demonstrated in the nasal mucus of man, which ought not to be the case if the theory of contagion from nasal discharges is correct.

Unsuccessful efforts were made to obtain the nasal mucosa of a fatal case but a swab was obtained in one case after death and inoculated without result. Krause and others have called attention to the early appearance of gastro-intestinal symptoms and lesions of the intestinal tract have been found in a number of cases. Leiner and v. Wiesner's experiments have shown the possibility of this avenue of infection and Landsteiner and Levaditi by introducing the virus in the mesenteric vein and causing paralysis have proved that the liver has no deterrent effect on the virus. The virus has not been found in the feces of monkeys. The feces of one very severe case of poliomyelitis were taken by us at the height of the disease, filtered and centrifuged, and the filtrate inoculated intracerebrally in a monkey. The animal four weeks later died of marasmus, and subinoculation of its cord and brain into a monkey did not produce the disease.

We wish to call attention to the fact that it is not so many years ago that yellow fever and relapsing fever were regarded as

highly contagious diseases, and yet to-day we know that infection by them is only transmitted by intermediary hosts. There are many features in the epidemiology and in our experimental knowledge of acute poliomyelites which likewise point to the contagiousness of the virus, but increasing knowledge both from epidemics as well as from the laboratory may lead us to a different conclusion.

In conclusion it would not be out of place to consider the attitude we should assume in our management of epidemics. It seems to us despite the lack of absolute proof, that the best interests of the community would be conserved by our regarding the disease from a contagious standpoint. This does not mean that we should unduly alarm and render hysterical by unnecessary restrictive measures. Since most epidemics of poliomyelitis occur in the summer months there is no necessity for closing the schools or play grounds. If, as appears, the carrier is an important factor, then nothing less than an absolute quarantine of every case will suffice and judging from other diseases in which the carrier plays an important rôle even this will prove insufficient. The fixing of a time limit for the quarantine in the present state of our knowledge is merely guesswork. In fact we are face to face with the same problems which have so long baffled the sanitarian in the control of better known infectious and contagious diseases. Fortunately, acute poliomyelitis is a disease which affects a very small percentage of the population.

108 WEST EIGHTY-SEVENTH STREET.

INFANTILE PARALYSIS—EPIDEMIC AND PANDEMIC.*

BY

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THE tardy recognition of the epidemic character of poliomyelitis in the last century resulted in a very limited written history or as we say epidemiology of this disease. There may have been periods before in the history of the old world when this disease became epidemic and pandemic, attacking all susceptibles; and, like other plagues, its progress self-limited, became apparently extinct, leaving behind it an acquired immunity of unknown duration.

*Symposium on poliomyelitis, East Side Physicians' Association, January 26, 1911.

We know it is a very ancient disease, for Mephibosheth the son of Jonathan, the son of Saul, was invited to sit at King David's table all his days, because "he was lame on both his feet," and we know this lameness was due to a so-called sporadic case of infantile paralysis, for the book of Samuel says:

"And Jonathan, Saul's son, had a son that was lame in his feet. He was five years old when the tidings came of Saul and Jonathan out of Jezreel, and his nurse took him up and fled; and it came to pass that he fell, and became lame, and his name was Mephibosheth."

Trauma and dentition are ever the causes given by parents for infantile paralysis.

The first recognition in medical literature of the epidemic form of this disease is an account by Dr. George Colmer, of ten cases of paralysis in teething children, occurring in the same season, in the parish of West Feliciana, in 1841.

Almost two centuries before this date, that intelligent woman Madame de Maintenon, had given in her letters a recognizable account of the disease attacking three children simultaneously, one of whom, the Duc de Maine, was left for life with a slight paralysis of one leg. Madame was the matron-governess of the children of Louis XIV, by Madame de Montespan. Extracts from letters to her confessor, the children's mother and the king, indicate an acute attack of three previously healthy children, a confusing skin rash, and a paralysis of one child, which made a spontaneous improvement during the succeeding year, yet left the little chap with a life long disability.

1674—Madame de Maintenon to Abbe Gobelin:

"Our princes (the Duc de Maine and the Count du Vexin) are in perfect health, and are breaking the toys you sent with much delight."

January, 1675. (Same to same.)

"I must go (to the Pyrenees) if the little duke goes. He is better and the little count also. The princess is ill, and the whole faculty cannot say whether she has the small-pox or not. . . . I have the greatest wish to go there (Maintenon estate, newly purchased) but the children's illness keeps me."

By advice Madame de Maintenon took the little duke first to Antwerp, to consult a celebrated physician of Antwerp. On returning to Versailles he was still unable to stand, and the trip to the Pyrenees was arranged. Louis sent his little son and governess in great state to Barages in the Pyrenees, and requested

her to bestow bountiful alms on the way. They were accompanied by the Duke's physician, M. Fagan, a man of cultivation and scientific knowledge. They were four months on the road.

Barages, 1675 (Madame de Maintenon to Madame de Montespan). "Le Mignon (dim. for duc de Maine) is quite well. . . . Guinne did wonders. . . . In four or five days we shall begin the baths. People speak of the prodigies they effect—but we must be patient."

The return to Versailles is thus chronicled by Madame de Sevigne in a letter: "Nothing was more agreeable than the surprise reserved for the king. He was expecting M. du Maine on the following day. When he saw him enter the room held only by the hand of Madame de Maintenon, he was transported with joy. On arriving M. de Louvoid (the minister of state) went to call on this governess. She supped at Madame de Richelieu's, some kissing her hand, others her dress."

This trip to the Pyrenees implying salubrious air, the use of waters to produce thorough elimination, and the massage recommended by the physician of Antwerp, may all be noted as beneficial factors as much now as in the seventeenth century. It is fairly probable that Louis' heart began to incline to this discerning woman when he observed her highly sagacious care of his otherwise neglected children, which redoubled when a disabling illness added its burden of anxiety.

In 1881 a Swedish physician recognized and reported an outbreak of the disease of thirteen cases in the town of Umea in North Sweden. In 1894 the first serious epidemic in America occurred at and near Rultand, Vermont. From 1880 to 1905 forty-five out-breaks were reported. Most of these epidemics occurred in Scandinavia, although the Mediterranean coast, Australia, and the United States were invaded.

Dr. Charles Caverly's graphic report of 132 cases of "an acute nervous disease whose chief distinguishing characteristic was motor paralysis—which prevailed in the state of Vermont, chiefly in a single valley, during the summer of 1894"—must have given pause to any thoughtful physician into whose hands it came. The disease had clearly become epidemic. It manifested clinically an infectious and contagious nature, and yet no text-book nor school of medicine, during the five years which closed the nineteenth century, prepared students nor physicians to handle such an epidemic, nor give the least warning that a disabling

and killing malady would become pandemic before the first decade of 1900 was closed:

Dr. Henry Ling Taylor of New York City in a letter to the *New York Medical Journal*, reported seeing twelve cases of infantile palsy during the month of July, 1897, and very pertinently inquired whether it might not be the beginning of an epidemic. But on the whole very little comment was roused by the inroads of a disease which was soon to devastate the children of New York.

In the north of Europe there are two little countries, Norway and Sweden, from which there is yearly a great tide of emigration to the upper Mississippi Valley. During the summer of 1903 Norway was visited by an epidemic, the victims of which usually suffered a paralysis of one or more extremities. It returned the summer of 1904, had increased to menacing portions the summer of 1905, and spread over a considerable portion of Sweden. In 1906 it devastated many children who had not previously succumbed. There were 1053 cases in Norway and 1031 cases in Sweden during these four years. Prof. Francis Harbitz of the University of Christiana, appointed by the Norwegian government to investigate this plague, stated in his report:

"The disease was plainly contagious and spread along lines of communication."

During the summer of 1907 New York City paid the penalty of being the principal port of entry from Europe. In that summer there were 2,500 cases in the city and vicinity. At the same time there were two small outbreaks in Michigan and Wisconsin, in communities which received Scandinavian immigrants.

The epidemic of acute focalizing paralysis in Wisconsin in the summer of 1908 began in the city of Eau Claire, and spread from there through the county and state in ever widening rings. Eau Claire is a city of 20,000 inhabitants, picturesquely situated in the Chippewa Valley, at the confluence of two beautiful rivers. Its many prosperous Scandinavian citizens frequently return home to the old country on vacation trips, and their numbers are steadily augmented by immigration.

By briefly reviewing the progress of the epidemic in this country town, we may I believe gather a few threads of information which will bear on our conclusions when we review its world progress. And also a knowledge of an epidemic visitation in a small community illustrates most clearly the common danger, the common fear, and the common sorrow to which all are exposed. In a county

seat where everyone knows everyone else, all hearts are touched when 100 children are stricken, crippled or killed while an epidemic affecting 2,000 or 3,000 children in a city of 5,000,000 people is barely noted, and as you know did not stir the Board or Health of the city of New York to the slightest action.

On a certain day in late July that summer, nine children under eight years of age were stricken with similar symptoms. Their homes were within a stone's throw of each other. Three of these children died with bulbar involvement within forty-eight hours. Three developed paralysis of one or more extremities. Three, after an illness which swept their nervous systems like a cyclone, made an apparently complete return to health. They lived in an insanitary district near the river, at the west approach to a much traveled wagon bridge.

On looking back through the death certificates on file in the office of the Board of Health, I found the death reported on May 29 of that year of a girl of seven who lived just across the river from these cases and at the east approach of the same bridge. The death certificate read. Cause of death, "measles; contributing cause, epilepsy." She had been sick three days. The family said she had never had a fit before. The Norwegian physician who was called to the case a very few hours before death occurred, admitted to me that it was probably an undiagnosed case of poliomyelitis of the fulminating type.

Further investigation of the death certificates showed that a young man of twenty years had died of convulsions in this same neighborhood on July 16. He was sick less than one day, and no doctor had been called to the case till death occurred.

In the city of Eau Claire in a small area of the ninth ward there were nine cases and three deaths the last week of July. During the succeeding eight weeks there were 167 cases in town and county. Following these cases a number promptly appeared scattered pretty well over the town, but each early case in a neighborhood was followed by several in that immediate locality.

The last distinct group of cases to appear was in the third ward. This is the aristocratic residence portion of the town, and is somewhat separated from the rest of the town by natural and artificial barriers. The river which is unbridged south of this point is an artificial barrier as also the fact that the business district bounds this area on the north. The first case

in this area appeared September 5, and heralded fifteen cases and five deaths. Although, as I said this is the aristocratic section of the town, a wagon road crosses it from the farming districts to the east of the city. On this wagon road a watering trough for stock was placed and a man of fifty years of age opened a small shop nearby where all of the children ran for bonbons. The first three cases were one-half block from this shop, three boys in three different homes, each of which developed a paralysis but recovered. One block south on the same street, two brothers developed the disease on Wednesday and Thursday preceding the Sabbath on which they both died within five hours. Called in consultation I witnessed these two deaths, the termination in each case due to an ascending paralysis. Fourteen of the fifteen cases were children and young adults, but the fifteenth was the man of fifty who kept the little shop. On October 21 he was taken ill, and said to a neighbor who found him sitting over a stove, "I have had backaches before, but never anything like this." He developed a paralysis of both legs and died October 26.

As secretary of the Eau Claire County Medical Society, I kept a record of all cases reported; when it became apparent that we were visited by an epidemic that was constantly enlarging its borders, the *Wisconsin State Medical Journal* editorially requested all the members of the State Medical Society to report their cases to me, and enclosed my report blank in each copy of the journal. Four hundred and eight were reported, and hearing through the County Superintendent of Schools, there were cases occurring through the country districts to whom no doctor had been called, she most kindly accompanied me as guide to many of these remote homes.

There are many cases of interest that I would like to narrate to you, but I will confine myself to one poor and obscure family as an instance of the swift and dreadful nemesis this plague has been not only to the children but the bread winners of the yeoman class of our country.

Twenty miles south of Eau Claire is a village of 1,400 called Augusta. Three miles from Augusta lived the Wagner family consisting of father and mother and six children. Their farm was as yet a clearing in the woods. They grew corn and potatoes, lived in a one-room log house, and Wagner worked steadily clearing his little domain, exchanging firewood for groceries and clothing. They had no pump, carrying water from the creek

one-fourth of a mile away. That summer of 1908 they took a boarder, an old man who was a county charge, for whom they received the sum of \$1.50 a week. A few days after the old man's arrival he was taken ill. Mrs. Wagner nursed him, but a week later her husband became ill in the same manner; and one by one all of the children. The old man and three of the children got well. The father was left with a paralysis of one leg and three of the children had an arm or leg paralyzed—the girl ten, a boy four years of age, and a baby.

Dr. Herman Prill, the physician of this little community of Augusta, reported to me eleven cases of paralysis in the town, and wrote that including the milder forms without paralysis that there were twenty-five or more.

There have been many other striking instances. In Nebraska seven young men of a threshing crew all became ill while threshing for a family who had one member ill of the disease. And when we speak of young men we cannot ignore the two epidemics that occurred at Princeton and Cornell this past summer.

Our mortality rate was 15 per cent. The members of the State Medical Society considered that my estimate of a thousand cases was justified.

At Moosehead Lake, Minn., a group occurred simultaneously and was reported to me by Dr. Hamilton of the Neurological Department of the University of Minnesota.

I will now ask your attention to the consideration of several obscure facts that recently I correlated as of some possible bearing on this epidemic.

It has been observed by many investigators that cases have followed cases, which occurred in the same house, at intervals varying from a few months to twenty years or more. (Cassidy, Durand, Wis.). This fact would seem to indicate that there are localities which are endemic foci of this disease.

Two summers before the epidemic in Wisconsin, a relative of mine who is a breeder of fine stock and has a number of farms situated at considerable intervals apart in Eau Claire Co., consulted me regarding the sudden and unexplained mortality among his recently foaled colts. They became ill, could not stand when placed erect, their hind legs straightened out, became spastic, and they died. This man is an attorney, and is also a post-graduate of the Wisconsin University Agricultural School and Veterinary course. He is a stock breeder of many years, but he assured me he had seen nothing which tallied with this dis-

order. I looked at two of the colts, inspected the barns and the box stalls of the brood mares, and made a diagnosis of probable lock-jaw from infected umbilical stump of the new-born; I advised more light, a better general sanitary condition, and the use of antiseptic wash for the expected colts. This was extremely amateur veterinary service, and, in fact, I declined to give an opinion until the veterinary doctor of the town had been called, but I assure you, gentleman, the country doctor enjoys a prestige only equal to that ependium of knowledge he is supposed to represent.

The same year his wife's young driving horse developed a faulty gait, a sort of spasticity of one leg, and had to be disposed of. I heard no more of the sickness of the colts, but the following summer was again consulted. On a sheep run, on the Little Elk, a small trout stream, his sheep were dying at the rate of two or three a day. The only symptom we discovered was a slight running at the nose, then they fell over and died. Here were sheep living the simple life in the summer time on a grassy beautiful, well-drained farm, under conditions that looked absolutely ideal to a tired doctor, and yet were "dying like sheep."

I will stop a moment to ask if anyone present can tell me how that phrase "dying like sheep" originated. It sounds to me like history in epigram, for idioms and old saws are the repositories of history.

The following summer Dr. Percy Riley of Elk Mound, a hamlet of ninety-two inhabitants on this same water course a few miles below the sheep farm, sent me a report of thirteen cases of poliomyelitis, one of which occurred in December of the same year.

There have been a number of tables compiled and published, showing the extent of infantile paralysis in the United States during the years of 1907, 8 and 9. I would like to say however that the printed reports for 1909 are far below the reports given by the secretaries of the State Boards of Health of some of the states.

Three states alone reported over 3,000 cases occurring during the summer of 1909, viz.,

Massachusetts,	929	
Minnesota,	1,100	
Nebraska,	999	3,028

The coast-line involved in 1907 extended from Newburyport, Mass., to Jacksonville (Live Oak, Fla., J. Efrd, M. D.).

In 1909 it extended from Montreal to Cuba (Santa Clara, 140 cases).*

The summer of 1910 the Atlantic coast-line was again swept. We may roughly group this recrudescence in three areas.

North Atlantic.

Rhode Island	198
Connecticut	54
Vermont	34

Mid-coast Region.

Pennsylvania	1,106
Washington, D. C.,	500
Maryland	14
Virginia	335

Make a total in that intimately related area of 1855 cases.

South.

S. Carolina	150
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The inaccuracy of fourteen cases from Maryland is apparent.

You will notice that this division is arbitrary, for I have used as division lines, New York, New Jersey and North Carolina, which sent in reports none or insufficient.

Is it probable that they were exempt? By no means, but their dilatory Boards of Health had not yet placed this disease on the reportable list. A sufficient number of new cases have appeared in one hospital clinic in New York City steadily since, from Newark and other outlying suburbs, to show that there had been a very considerable epidemic in this vicinity in 1910.

South Carolina reported 150 cases, and the Board of Health issued one excellent bulletin on the subject. Her sister states made no report, although papers on this topic have recently appeared by physicians in Atlanta and New Orleans, which might be taken as presumptive evidence that their attention had been drawn by cases in their own territory.

The state of Washington reported 225 cases, Oregon eighty, and California thirty-three.

In the Middle West, Toronto, Canada, Indiana, Oklahoma, Idaho, Colorado, and Arizona were newly placed on the list, while cases recurred in the areas already listed.

In an inquiry conducted by correspondence with the secretaries of the State Board of Health, the statement was several times made that although the disease "was not a reportable one" they knew it "was occurring in several parts of the state."

Several secretaries also wrote that although the disease was not

* The Pacific coast-line from the south of Washington to California. The vast valley of the Mississippi was dotted with nuclei of infection.

Switzerland, Germany and England, France, Spain, Holland, Russia, were affected.

a reportable one there had been voluntarily reported to the board a number of cases.

The Central Federal Bureau of Health will be the corrective in the future to this lack of team work when an epidemic disease is rife. The world is debtor to these men whose brilliant investigations gave us the proof that this disease is transmissible; but we are absolutely uninformed as to the conditions responsible for the recrudescence of this disease, its animal host, and our helplessness in checking its march is attested by a study of these tables.

Each man after witnessing an epidemic visitation of this disease uses words which indicate the reflex horror of this experience:

Dr. Joseph Collins: "Half a century is an extremely short time for a disease so hideous and uncompromising to hide the secret of its being." And again, "These cases carried home to me everlasting and profound sorrow."

Dr. T. A. Williams, Washington, D. C., who reports "cognizance of over 500 cases," adds: "The situation is a serious one, and every new fact bearing on the disease should be weighed by us until we have found means to prevent the spread of infection or have discovered a method of arresting the invasion before the nerve elements are destroyed."

Dr. Flexner stated to the members of the Medical Society of the State of New York, "The disease has a curious history. Its appearance has been very mysterious in the past, and it has usually had its own way."

In the absence of more specific knowledge as to the methods by which this contagium is transmitted, we may be enabled by the study of this thirty-year table of the epidemiology, to arrive at certain fundamental truths, which I hope may have a definite bearing on its eradication.

In the past thirty years there have been three outbreaks of poliomyelitis, each of which became epidemic and pandemic in character. By an apparent coincidence this disease was manifested first in the incipient epidemic stage in Scandinavia. What is the incipient stage of an epidemic disease? It is the appearance of the first case of the disease after its apparent disappearance. If the transmissibility of a disease is proven, then one case of that disease, under conditions favoring its transmission, one case is all that is needed to start that conflagration which we term an epidemic.

All known cases occurring in the world since 1880 can be

roughly grouped into three periods, corresponding loosely to the three decades. Each group had its incipient stage, and received its initial impulse from Scandinavia.

Between 1881 and 1887 there were epidemics reported from Umea, and Stockholm, Sweden, and Mandel, Norway. There followed outbreaks near Lyons, and Bordeaux, France, and Boston, Mass. During the summer of 1903, Dr. J. J. Putman observed twenty-six cases of infantile paralysis in the dispensary clinics of Boston. During the summer of 1894, in a territory not at all remote from the seaport town of Boston, occurred an outbreak of 132 cases. With our present knowledge it is conceivable that the outbreak at Rutland, Vt., was due to a latent case imported from Boston the preceding year. The disease also appeared at Genoa, Italy, and Port Lincoln, Australia.

In 1899 Stockholm, Sweden, and Bratsburg, Norway, were visited with epidemics which aggregated 108 cases. This re-appearance of the plague was followed in 1900 and 1901 by considerable epidemics at Gloucester, Mass., and San Francisco. Why were two cities so remote from each other afflicted each with half a hundred cases of this disorder? What do they share in common? They are both seaports, frequented by sailors and deep sea fishermen.

1903 epidemic paralysis took a fresh start in the two Scandinavian countries, and unchecked, increased in numbers in almost geometrical progression for three years, modifying the fourth summer. During that four years closing with 1906, the careful reports initiated by the governments of these countries show a total of 2,620 cases.

In 1907 the North Atlantic coast-line was ravaged by this disease.

In 1908 that area of the upper Mississippi Valley, which has a large and constantly augmented Scandinavian population (Wisconsin, Minnesota and northern Iowa), had an epidemic of some hundreds of cases, which curiously enough manifested itself first in a county town, spreading out from there like circles in water. The writer reporting this epidemic to the West Wisconsin Medical Society, November, 1908, traced the probable progress of this epidemic from Scandinavia, via. that great port of entry, New York City, to Wisconsin, stating that "the main highways of travel have been the pathways of plagues for all ages." This statement produced an extended discussion by members of the society, as several did not at that time accept the theory that infantile

paralysis was an infectious or contagious disease. The report was printed in the April number of the *Wis. Med. Jour.*, and again in the November, 1909, issue, after presentation to the Wisconsin State Medical Society, July 2, 1909.

In 1909 this disease became pandemic in character. Massachusetts, Minnesota and Nebraska each reported a thousand cases. The Atlantic coast-line invasion extended from Montreal to Cuba, and the United States was swept from coast to coast. England, France, Spain, Switzerland, Germany, Austria, and Russia were invaded, as well as the west and south seacoast of Australia.

We know that the epidemic focal paralysis is a transmissible disease; we know it is an infectious disease; many of us who have had an opportunity of tracing its devastating march, step by step through a small community, believe it to be a contagious disease, not as some observers with insufficient data would have us believe, a mild contagion to be little dreaded, but under we know not wholly what favoring conditions, a contagion as readily acquired as that of small-pox!

We have been in the habit of terming an isolated case of infantile paralysis a sporadic case, but the premise once granted that this is a transmissible disease, the fact is established that each and every case of infantile paralysis has arisen from a similar case of that same disease, although the previous host is not of necessity a human host.

Three times this disease has ravaged three continents, and each time it was manifested in the land of Thor. Dr. Harbitz, professor of morbid anatomy and pathology in the University of Christiania, stated in 1907: "In Scandinavia, acute poliomyelitis has been well known for a long time, as it frequently occurs in Norway as well as in Sweden."

I asked a Norwegian physician if there were many sailors in his country. "There is no Norwegian family without one sailor" he affirmed, and then explained how the geography and conformation of Norway made up of long steep and narrow valleys, bordering arms of the sea, has made this an economic necessity.

The great pandemic which is now sweeping the world began in Scandinavia. Then New York City and other lesser ports, and near ports were invaded. You all know what the succeeding three years brought to the children and young adults of this country. I have stated elsewhere my belief, from the review of

all evidence, that 100,000 cases have occurred in North America in the past four years.

In the numerous careful reports of epidemics which we now have access to, there are some conditions which are apparently common to all. The epidemics reach the maximum during the summer months of that area in which they are manifest; in Australia this period, I understand, falls in March and April. The seasons are notably dry; dust is mentioned too often to be ignored, and seems to have an association with the dried and pulverized droppings of domestic animals. The area in which the cases first appear is usually a valley, or shall we say a drainage basin? The disease in its incipency has shown a preference for the north temperate zone.

When a recrudescence of this disease occurs it has invariably made its debut in the north temperate, sheep-raising countries of Norway and Sweden—countries with long cold winters, and the close housing, close association with their domestic animals, and insanitary habits engendered thereby.

The secondary appearance of these epidemics, if I may so term it, is found in the seaports frequented by sailors of the deep sea. When conditions do not favor its spread the wave-like progress of this malady fades away in the seaport town.

But there remains an endemic center! A sleeping menace, ever ready to disperse old seed in a new soil!

If this theory, as yet imperfectly worked out, which I present to you with great diffidence, can be proved, there will be work for governments and nations! Those endemic areas will be cleaned up as the harbor of Havana was cleaned of yellow fever, and you will not have to work alone to accomplish this cleansing of the Augean stables, gentlemen, for the whole world of public opinion will be your vis-a-tergo, if once this premise is shown to be correct.

The nation that could make short work of that endemic center of yellow fever can clean up the endemic centers of this ghastly scourge, whether located in our own country or elsewhere. I will not say the nation, I will say the profession of medicine, which has ever volunteered grand men when the advancement of medical science demand them.

252 CARLTON AVE., BROOKLYN, N. Y.

TREATMENT OF INFANTILE PARALYSIS.

BY

MASSAGE AND ELECTRICITY.*

BY

HENRY W. FRAUENTHAL, A. C., M. D.,
New York.

(With thirteen illustrations.)

My deductions as to the great value of electricity and massage as remedial agents in the paralyses following poliomyelitis are drawn from an experience during the past four years in the treatment of over 1,100 cases, most of which have been seen at the Hospital for Deformities and Joint Diseases. These deductions differ from statements in medical writings, and are from practical experience, not library visions and theories.

In the employment of physical methods, we must know when to begin, what methods to prefer, how long, and at what intervals to use them, and in what strength or intensity, for like chemical therapeutics, what may be a medium for great good may also be an agent for much harm.

Judging from many articles written condemning the use of electricity and massage, one is led to believe the statement of the late Dr. Lewis A. Sayre, "What doctors do not understand, they are apt to oppose."

After an extended review of medical literature, I have failed to find any detailed descriptive method of the use of electricity and massage in infantile paralysis, so if you will bear with me I will describe what I consider to yield the best results.

When should electric treatment begin, and what form of current should we use? Many writers advise waiting from four to six weeks after the temperature becomes normal before doing anything in the way of treatment. I have found that we obtain the best results by beginning when paralysis appears and even before the temperature is normal.

I have found that in the application of the Oudin or d'Arsonval high frequency current in cases of obliterating endarteritis, that the skin became blanched and remained so for several minutes, showing that the primary effect of the high frequency

* Based on the records of the past four years of the Hospital for Deformities and Joint Diseases.

is a contraction of the blood-vessels. With this effect in view, hoping to reduce the blood and serum compression on the nerve cells in the spinal cord, I have in the first few days of the paralysis applied this current along the spinal column, and feel positive that I have relieved the compression in the cord and hastened recovery. I will cite one case.

CASE A.—Gertrude G.; six years of age; normal delivery; previous history not pertinent.

I was called by Dr. Brainglass to confirm his diagnosis of infantile paralysis, on June 13, 1910. Sister of the patient had had the disease with facial involvement.



FIG. 1.—CASE A. Gertrude G.

When I saw this child both legs were involved; the paralysis extended up the spine, and seemed to be of the progressive type. Hoping to stay the advance of the paralysis and expedite a recovery, having explained to the doctor the benefit I hoped to obtain by the d'Arsonval current, and receiving the concurrence of the family, I had the child removed to the Hospital for De-

formities and Joint Diseases where, after the first two days treatment with high frequency along the spine, particularly over the lumbar region, a marked improvement in the child's condition was shown. This treatment was kept up and combined with the other treatment of massage and electricity as herein described.

The child has made an almost perfect recovery; can bear her weight and hop on either leg, and walks with a normal gait.

When the temperature is between 98.5° and 99.5° and in some cases where high temperature continues for several weeks, I have not let this deter me from treating the patient.

I give to the muscles involved a sinusoidal current, alternating with a combined galvanic and faradic current that contracts seventy-two times to a minute, synchronous with the heart beat (such a clock arrangement is found on Victor electric plates, and others); and I personally regard this as an aid in the effect.

We know that we can obtain contraction of the muscle by means of electrical current, when none can be obtained by the will, hence this is a valuable means of retaining and developing the muscle fiber until it comes under the guidance of the mind.

Although many differences of opinion prevail as to the application of the sponge electrodes, I am in the habit of applying them at the origin and insertion of the muscle or muscle groups involved, always laying stress on the importance of approximating the origin and insertion of the muscle as nearly as possible.

For instance, in treating the perineal group, these muscles being most frequently involved, one sponge is placed over the middle third of the outer side of the fibula, the foot flexed as much above a right angle as possible, and the other sponge applied over the insertion of these muscles on the outer side of the foot. In this way the bellies of the muscles are relaxed and a contraction is made more easily.

I believe much foolish stress has been laid upon the reaction of degeneration, and I wish to prove, from a large practical experience, how deceptive it may be.

It is said that a failure to obtain a muscle contraction by a galvanic or faradic current is an evidence of degeneration of the muscle fiber and that no improvement can be looked for in this paralyzed condition in the future.

Do we fail to obtain a contraction in most cases? No! We find that the cutaneous surface will not tolerate the pain of the current and we must desist before contraction takes place, for most of our cases occur in children under five years of age, and they see no reason for enduring the electrical pain. This is even

true in other cases, when the age of the patient and his cutaneous tolerance is greater; the strong currents may give no reaction and still reappearance of function may occur.

CASE B.—This case, with Cases C, D, E and F are shown to correct two long established fallacies.

One, that no improvement will occur whether spontaneous or under treatment after one year; many say six months.

The other, that after failure to react to either the galvanic or faradic current, known as the reaction of degeneration, no improvement can be looked for.



FIG. 2.—CASE B.

Frank S.—Boy, sixteen years old; when one and a half years old had an attack of infantile paralysis involving his face and arm; fourteen years after this attack appeared at the Hospital for Deformities and Joint Diseases, hoping to receive treatment that would improve the condition of his face. He was turned over to Dr. Chas. Rosenheck, who had had five years' experience at the Roosevelt Hospital dispensary (department of neurological diseases) and also at the Harlem Hospital dispensary (neurological department), and who reported to me that he was satisfied that his reaction of degeneration was such as to be

beyond all hope of the slightest benefit. I requested the other members of the staff to confirm this condition, as I wished to see if, after the lapse of fourteen years, with a positive reaction of degeneration, any improvement could take place. The improvement was so great after being under constant treatment for six months (the boy being able to close eye and produce wrinkles in his forehead, with a return to the normal outline of the affected side of his face) that he was shown at the Pediatric, Neurological, Orthopedic, and other sections of the Academy of Medicine. Many other similar cases have been encountered.

Many other cases of from five to ten years' standing are in the records of the hospital, with equally satisfactory results.

The strength of the current used should be the weakest that will produce contraction, and it is never to be used after contraction of the muscle ceases, nor longer than from two to three minutes on any particular muscle group, or from six to ten minutes on the body at one seance.

If this method is followed the child will not cry from pain, or have its nervous system upset by too long continued electric treatment.

Medical massage dates from the work of Dr. Metzger, of Amsterdam, and his followers, and his classification in a great measure still prevails.

1. We have the passive movements which are given to the patient by the operator.

2. Active movements made by the patient with the assistance or resistance of the operator.

The following are the manipulations:

1. *Effleurage* consists of a centripetal stroking by means of the inner side of the thumb and first finger and the space of the hand intervening, milking and pressing the blood and lymph from the extremities toward the body.

2. *Frictions* are given with the thumb or the tips of fingers; they are strong, circular manipulations and are always followed by centripetal stroking.

3. *Petrissage* (kneading); this manipulation is performed by the tips of the thumb or the palm of the finger; it is used principally on the extremities.

4. *Tapotement* (percussion) is divided into five kinds:

- a. Clapping, which is performed by the palm of the hand;
- b. Hacking, with the ulnar border of the hand;
- c. Punctuation, with the tips of the fingers;
- d. Beating, with the clenched hand;

d. Vibration, as the friction of the vibrator.

Zabludowski has shown that muscles regain their aptitude for work much more quickly by a few minutes of massage than by rest for a longer time.

Dr. Benjamin Lee ("Hare System of Practical Therapeutics," vol. ii, page 321) states "In the essential paralysis of infancy, truly wonderful results are obtained by massage."

The treatment should be entered upon the moment the acute inflammatory symptoms have disappeared and be continued daily in the face of seeming absolute ineffectiveness, for weeks and even months. Cases in which no improvement can be detected for long periods often suddenly begin to improve and progress with great rapidity.

The effect of massage may be arranged as follows: Mechanical, reflex, thermal, electrical.

1. The mechanical effects are by far the most important (but the others should not be overlooked or forgotten). They consist of the interchanging of cell contents under the influence of alternate pressure and relaxation; a quickened movement of the blood in the capillaries, especially in the muscular tissue; increased activity in the movement of the areolar fluid; acceleration of the currents of both blood and lymph in their respective channels.

2. The reflex or purely nervous effects of massage are obtained by light stroking and precussion. The former produces results which can only be explained on the supposition that it acts as a stimulant to the reflex system of nerves, the force used not being sufficient to account for any change on the mechanical theory.

3. The thermal effects of massage and movements are almost too apparent to need scientific demonstration; everyone is familiar with the fact that both muscular contraction in the form of ordinary exercise and simple friction develop bodily heat in a striking degree. Dr. Weit Mitchell, in his essay on "Fat, Blood and how to obtain Them" notes (what has been observed by many others) that he has frequently seen the strangely cold limbs of children suffering with infantile paralysis gain from six to ten degrees Fahrenheit during massage.

4. The electric effect of massage results partly from the development of the surface heat, partly from the surface friction, partly from the attrition of the muscular fibers and cells, partly from the nerve stimulation and chemical action.

Graham observes that muscles give a much more ready,

vigorous and agreeable response to the will and to the faradic current after massage than they did before.

A child suffering from infantile paralysis was introduced; the affected limb having a surface temperature of 70° F., the poles of a battery were applied to a limb, and eleven milliamperes were required to produce muscular contraction; the limb was then massaged and the temperature was found to have risen to 95° F.; the poles being applied at the same points, contractions followed the employment of only five milliamperes. It is evident, therefore, that massage diminishes the resistance of the tissues to the electrical current and increases the electrical contractibility of the muscles.

As some men prominent in orthopedics and neurology have condemned the use of electricity and massage, I have taken one of the most recent articles, as illustrative of this side of the subject: *i.e.*, Dr. Henry Ling Taylor (Professor of Orthopedic Surgery, New York Post-graduate School and Hospital, Adjunct Attending Surgeon, Hospital for Ruptured and Crippled, *Medical Record*, October 15, 1910, page 660) says, "The conventional treatment by electricity and massage is completely ineffectual." To further support this position, he continues, "This was publicly acknowledged by Dr. Bernard Sachs of New York, a distinguished neurologist, etc., and chairman of the Collective Investigation Committee of the New York epidemic of 1907, at the Congress of American Physicians and Surgeons, at Washington.

May 10, 1910. In these words he spoke of electricity and massage: "I consider that the time given to massage and electricity, in these cases, is time wasted. I cannot see that these same methods do any definite good."

It is true that Dr. Sachs made the above statement in May, 1910, as I was present at the time; but five months later, on October 24, 1910, at the New York Academy of Medicine, Dr. Sachs, in discussing this subject, spoke of electricity and massage in the highest terms, as he had previously done in the *Journal of American Medical Association*, October 22, 1910, page 1465; thus showing that a man of the highest standing, from a later and more comprehensive knowledge of the subject, completely changed his views of the value of electricity and massage,—a striking illustration of the old adage, "wise men change their minds."

That Dr. Taylor is unconsciously in accord is shown on the next page of his own article, where he speaks in the highest terms of vibration (which is a simple mechanical massage) and active

and passive movements (which have always been classed under Swedish massage).

In support of this treatment, in the Bulletin of the Massachusetts State Board of Health, on infantile paralysis, 1909, Drs. Bradford, Lovett, Brackett, Thorndike, Soutter and Osgood, in speaking of the treatment said:

"Electricity.—The different forms which may be used for this are the galvanic, faradic, static and high frequency currents. In the early stages galvanism should be used on the nerve trunks and faradism on the muscles, so long as their irritability for contraction is maintained. When the irritability of contraction to the faradic is lost, galvanism should be used, as having more influence on nutrition. With the returning muscle irritability, faradism should be used, and best by the use of the electrodes over the muscle points so as to obtain actual contraction of muscles rather than by the application of the electrical current to broad surfaces. This serves as a distinct exercise to the muscle during its early stage of weak contraction. High frequency and static electricity can both be used for their influence on nutrition rather than for their direct action on muscle contraction. It may be stated, in this connection, that the main dependence for actual results must be placed upon the galvanic and faradic currents.

"Massage and Mechanical Therapeutics, etc.—These constitute another means of artificial stimulation, both of nerve and muscle, particularly in their effect upon the circulatory changes. The physiotherapeutic methods are less generally applicable, demanding apparatus for their use, but massage should be given the highest place in all stages of this affection. In conjunction with massage, however, it is wise to reiterate the caution that it is necessary not to rely upon massage alone but that this means should be regarded as an adjunct only to the other forms of muscle and nerve stimulation. Too frequently has it been remarked that massage alone is used to the neglect of many of the other means fully as important."

I am personally convinced that I have seen several cases whereby giving electricity too strongly or for too long a time had done decided harm.

This is also true of too prolonged massage treatment. To illustrate this I will cite two cases.

L. H.—Bethlehem: Child had a very severe attack of infantile paralysis, involving the extremities, back, abdomen and chest muscles, with total exhaustion and all muscles flaccid; he

received massage for an hour and a half, or more, daily, with no improvement, but great exhaustion followed. The child has improved decidedly under more rational treatment of massage and electricity.

Case referred by Dr. Taggart of Atlantic City: Child had involvement of left leg and arm. Treatment was given for one hour three times a day. A strong healthy man finds massage, which is applied over the whole body for an hour, a physical tax. What must three hours' treatment a day mean to muscles devitalized by the lost nerve supply of infantile paralysis.

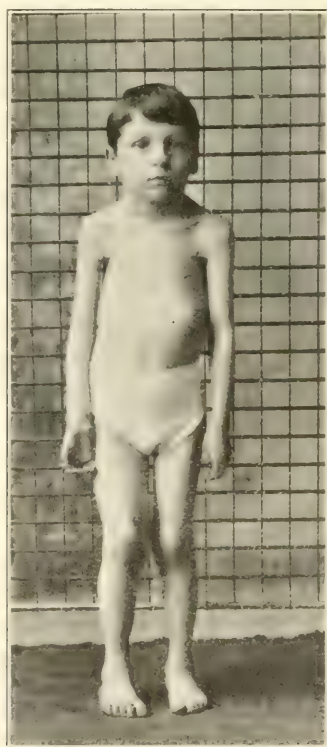


FIG. 3.—CASE C.

Referred to the Hospital for Deformities and Joint Diseases, by Dr. Koplik, seven months after initial paralysis. When admitted, all the muscles were flaccid; child had no use of arms or legs; all muscles of respiration including diaphragm and muscles of neck were involved.

Under massage and electricity, the muscles of both legs have regained their normal function; nearly all function has returned to the left arm; function of the right deltoid is absent, but the trapezius and flexors of the hand have regained their function. There has been some atrophy of the pectorals and apparently some of the intercostal muscles, as shown in the picture.

When the child was admitted to the hospital, we looked forward to obtain an autopsy. The extreme condition of this child makes the amount of recovery almost remarkable.

In conclusion, I wish to recall some salient points.

1. Treatment should begin immediately after paralysis appears, but should be mild in the beginning.
2. The application of high frequency over the spinal column by its contracting action relieves the compression on the nerve cells in the cord by the extravasated blood and serum.



FIG. 4.—CASE D.



FIG. 5.—CASE D.

Represents a type of recovery partial in the one leg, with promise of a flail leg in the other.

D.—Paul E.: Seen in consultation and referred by Dr. Chas. G. Kerley, on October 16, 1910. No spontaneous resolution had taken place in the right leg, and apparently from his muscular condition, he gave no promise of improvement, while the other leg had very little ability to perform the normal motions, much less bear his weight.

The child had been ill since the end of July, 1910, with no spontaneous resolution; very little was looked for in the way of improvement. With Dr. Kerley's concurrence, he was removed to the hospital. As shown in the picture, after three months treatment, he is able to stand alone in braces; is able to lift both limbs, at an equal or right angle; bear the additional weight of the braces, and I am looking for progressive improvement.

3. That even though we fail to obtain apparent muscular reaction by the galvanic or faradic current, we can prevent muscle atrophy by these currents and by the sinusoidal and high frequency, and win a victory from what seems positive defeat. This I have proven in over fifty cases, who have had previous treatment from one to three years, in other institutions, without the ability to walk, or an ability to use their arms. Many of



FIG. 6.—CASE D.



FIG. 7.—CASE E.

E.—Arthur H.; after initial attack received four months treatment at one clinic, eight months treatment at another clinic, and on going to the third clinic, an operation for fixing the foot and ankle was suggested, as apparently there was extensive atrophy and no function.

At that time she (Mrs. H.) met the mother of a patient, who had had her child for treatment at the second institution for three years, with no ability to stand or walk, and Mrs. H. was informed by her that under treatment at the Hospital for Deformities and Joint Diseases for five months, the child was able to walk without braces. Mrs. H., regarding this as an absurdity, made a special visit to the child's home, and seeing what she regarded as a miracle, brought her child.

This child was under treatment for seven months before he gained any promise of bearing his weight on his right leg, and after one year, he is able to walk with almost normal gait.



FIG. 8.—CASE F.

This case is shown to illustrate how massage and electricity, carried out by the parents alone, has won success, when many prominent physicians, who were consulted from time to time, made the darkest prognosis, with no promise of the use of either limb.

Olive B.: When one and a half years of age had an attack of infantile paralysis, with both limbs involved; patient was not able to bear her weight on either limb for two years. During this time, various physicians were consulted, and the mother was told that the case was hopeless. At the advice of an old physician, the mother herself purchased a battery and gave the child massage and electricity. At a later time, braces were ordered by institutions and applied, but as the mother thought that this did not aid in the recovery, they were discarded.

Nevertheless, the mother proceeded in the massage and electricity, keeping up the treatment almost daily for twenty years. The girl, as I now present her, is twenty-four years of age; has no difference in the length of her legs, but the right foot is an inch and a half shorter than the left. She is just recovering from a corrective operation on this right foot.

I am particularly pleased to show this case, in order to demonstrate the perseverance of a parent, recognizing the improvement derived from the treatment, in opposition to the advice of many physicians that she consulted, also the advice she received in a number of institutions, showing how much could be done by the love labor of a parent.

these cases have been shown at the section meetings of the Academy of Medicine.

4. The electric current should be the weakest that will produce a muscular contraction, and should not be continued in weak muscles when contraction ceases.



FIG. 9.—CASE G.



FIG. 10.—CASE G.

M. T., referred to the Hospital by Dr. Reginald H. Sayre, who took the original photographs, X and Y.

This case suffered from a severe attack of infantile paralysis in the epidemic of 1907. The original diagnosis, from pain, was regarded as one of rheumatism, and this diagnosis was concurred with by consultants. Her total paralysis was not noticed until two weeks after the original attack. After six months, she was referred to an orthopedic specialist, and she journeyed from Yonkers to New York once a week to receive treatment which consisted of electricity. The journey back and forth completely exhausted her for twenty-four hours.

The curvature in her back became so pronounced that a brace was applied. The deformity progressing, another consultation with a second orthopedic surgeon was requested. As a result of this consultation a Calot jacket was applied; was also wearing a brace on her right foot. No improvement was noticed.

5. We should approximate the origin and insertion of muscles when applying electricity.

6. Finally I would call attention to a class of active and passive movements (that are guided by a nurse) done before a mirror, and having the child concentrate its mind on each physical effort. This class of exercises, in children over three years

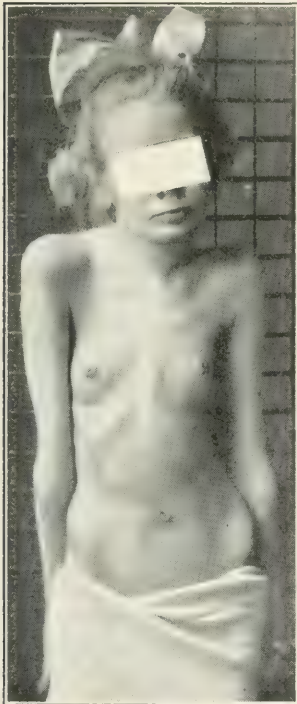


FIG. 11.—CASE G.



FIG. 12.—CASE G.

Consultation with a third orthopedist was sought. This orthopedist endorsed the treatment as conducted.

In September, 1909, she was seen in consultation by Dr. R. H. Sayre, who recorded her condition in photographs X and Y. Regarding her case as one that should receive aggressive treatment, she was turned over to me, at the hospital, where for three months traction was made on her extremities and head, with daily electricity and massage to her weakened muscles. This was followed by a plaster jacket and jury-mast.

Photographs taken one year later, as shown in X- and Y-, show marked improvement, also demonstrate the fact, not accepted by many orthopedists, that in rotary lateral corvatura, with bony deformity, much improvement can take place. A line drawn down from the left nipple in the front, or from the angle of the scapula in the back, or following the crease of buttocks up, will bring out the change that has taken place.

Since these photographs have been taken, the patient has made decided improvement, but objects to having another photograph taken.

of age, has yielded the most brilliant results in my work. As a final summary of my own personal estimation of the relative value of electricity, active muscle education and massage, in the treatment of Infantile Paralysis, it is my opinion that the rating of good accomplished would be 55 per cent. from electricity in

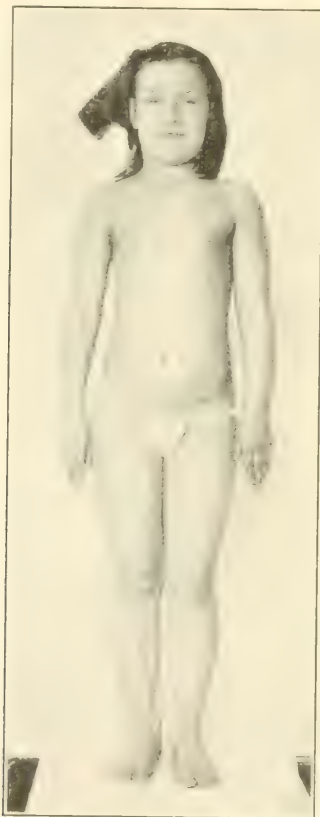


FIG. 13.—CASE II.

This illustrates a case with total paralysis after eight months, which made a perfect recovery under treatment.

its various forms, 25 per cent. from muscle education combined with mental concentration on the physical effort, and 20 per cent. from muscle stimulation by massage.

I hope that in the near future medical schools will give more attention to massage, electricity and other physical therapeutics in their course of instruction.

THE MANIFESTATIONS OF THE ACUTE STAGE OF
POLIOMYELITIS IN CHILDREN.*BY
LEGRAND KERR, M. D.,
Brooklyn, N. Y.

It is true of all the infections of childhood that the symptomatology is distinctly seasonal and varies with each particular epidemic and especially with the type of child affected.

For instance, we do not expect the rachitic or malnourished child to respond in the same manner to an infection as does his healthy, well-nourished brother. Nor do we look for exactly similar reactions in the infant as in the older child.

In the presence then of a disease that has long been recognized, but only recently carefully studied, we find sufficient reason for the varying and apparently conflicting statements as to the manifestations of the acute stage.

We may rather arbitrarily divide these manifestations into three somewhat distinct periods; the period of onset, of paralysis, and of retrogression.

The symptomatology of the period of onset is by no means constant, and there is such a variability that three rather distinct types of onset have been noted.

The commonest is that of an acute illness of an indefinite nature, lasting for two or three days, with symptoms of fever, diarrhea, vomiting, and some malaise prominent, and followed by paralysis.

There may be other symptoms present, as dysphagia, constipation, cough, and undue restlessness, but these usually do not excite any particular attention or comment.

Upon the other hand, there may be a prolongation of just this symptomatology over several days.

In a small proportion of the cases, the nervous phenomena are so prominent that they make one suspicious of a cerebral rather than a spinal affection.

A less common onset than the preceding one is that in which there is very apparent suddenness, which is probably more apparent than real.

It is more than likely that most of the cases with such an onset

*Part of a symposium on poliomyelitis presented before the East Side Physicians' Association, January 26, 1911.

terminate fatally before an accurate diagnosis can be made and are often reported as cases of meningitis when the real condition present is an involvement of the cervical portion of the cord.

An insidious onset without any serious general manifestations, the disease going through the successive stages without some prominent and suggestive symptoms to give the clue, is the rarest type of onset in children. Or in other words, a true subacute or chronic course throughout all of the stages of the disease is at best rare. In these cases the paralysis is not marked as such, but is exhibited as a muscular weakness followed by wasting.

It is extremely doubtful if the disease ever occurs in fetal life and of the early cases which have been reported, as for instance, those occurring during the first few days or weeks of life, there is room for considerable doubt as to the diagnosis. The more probable etiology is hemorrhage rather than poliomyelitis.

In seventy-four cases observed by the writer since August, 1909, the youngest case was a female infant of four months and the oldest was also a female of twelve years and one month. However, while this range seems a wide one, we must emphasize the fact that in over four-fifths of all the cases, the occurrence of the disease was before the end of the second year. In this, as in other epidemics, the last half of the first year showed the largest number of cases.

There does not seem to be any marked differences in the affection of the sexes and a close study of many epidemics will show that this is a varying factor. In my seventy-four cases, there were thirty-nine females affected as against thirty-five males.

Irrespective of the weather conditions which prevail and which have no influence that can be determined, the disease is one that is somewhat strictly limited to the late summer, the larger number of cases being observed at that time.

There seems to be clear evidence that there exists an individual susceptibility. This is borne out by the fact that in a very large proportion of instances but one child in a family is affected. Further than this, this susceptibility seems to be influenced by the age for the large majority of cases occur early in life.

Of course, we must not lose sight of the fact that with increasing age in childhood there is a decreasing aptitude for all infections.

A few words should be said in regard to the individual symptoms.

Fever is present in about 80 per cent. of the cases and when confirmed by the thermometer shows a range of from 100° F. to 102° F. as the rule and the higher temperatures as the exceptions. This rise in temperature usually persists until the occurrence of the paralysis at which time it either disappears or is much lowered. Exceptional cases exhibit a persistency of the temperature rise after the onset of the paralysis and this is usually accompanied by constitutional disturbances.

Diarrhea is present in some degree in over one-half of the cases, but there is nothing about the number or the character of the stools which is in any way suggestive.

Vomiting is rarely a prominent feature and only occurs in about one-third of the cases. Its most common occurrence is at the time of the onset of the fever and therefore there is always some doubt as to whether it is due to the onset of the disease or is merely the result of a digestive fault at the onset of an elevated temperature. It is very transient, lasting for but a few hours as a rule and is never projectile.

Cough is rather common and without any detectable physical signs to account for its presence. It occurs in about one-third of the cases.

Constipation occurs in a small proportion of cases.

Difficulty in deglutition is not uncommon and this is irrespective of any condition in the throat that might account for it. It occurs in fully 30 per cent. of the cases and is one of the earliest symptoms.

Rigidity of the neck musculature is infrequent but, may occur and prove misleading. Its onset is sudden when it occurs, and there are distinct periods during which more or less relaxation takes place or the head may be readily brought forward by the examiner. The writer has not found that this symptom has any more significance than the similar rigidity which is seen occasionally in the other infections.

Transitory loss of sensibility may often be noted in the cases which are seen very early. In three cases seen upon the first day, three upon the second and one upon the third day, the writer demonstrated this loss of sensibility by pricking and the application of cold and heat.

Pain is present in more or less degree in practically every case and can be readily elicited by gentle squeezing of the muscles. This sensitiveness of the musculature is irrespective of the muscles which are affected, being quite general. After the first

few days, the pain is more strictly localized in the affected musculature and in these muscles is apt to be even more marked than previously.

While there is nothing at all suggestive in any of the symptoms taken individually, there are combinations of them which prove of great value in the presence of a known epidemic.

The commoner combinations are fever, diarrhea and cough with or without dysphagia, or fever, vomiting, cough and diarrhea. Other combinations are much less common.

It was just this variability and indefiniteness of the symptomatology which makes the diagnosis of the disease practically impossible before the onset of the paralysis.

I wish to make it clear that I do not consider the symptoms which are present during the first days of this disease as divorced from it, but they are part of the process. There has been a decided tendency in the former epidemics to attribute the prodromal symptoms to some intercurrent disease and to consider the onset of the paralysis as the onset of the disease. This, however, is not so. Even in my work in this epidemic I noticed this same view to be prevalent. Recent pathological research seems to prove very conclusively that the first onset of widespread paralysis is due largely to edematous pressure in the cord and that it follows one or more days of indefinite symptoms. As the edema subsides the paralysis is decreased and any permanent disability in the musculature is due to the destruction of some of the nerve ganglia.

There is a preponderance of gastroenteric symptoms in the onset of the disease. This, I believe, is what has suggested the idea that the disease is one that finds its inception in the digestive tract. But we must not lose sight of the fact that in all of the acute infections of children, similar symptoms are the rule and in as large a proportion. I do not feel that any more weight can be given to their occurrence in this disease than to their common presence in the other acute infections of childhood.

The interval between the onset of the symptoms and the occurrence of the paralysis varies greatly. The onset of the paralysis may be apparently so sudden that no symptoms have been noted as preceding it. It is not uncommon to find that a child has retired at night in apparent perfect health only to awake a paralytic in the morning. However, in following up the histories of several of such instances, the writer was able in practically every instance to bring out the fact that mild symptoms

were present for a day or more before the onset of the paralysis, but that this calamity overshadowed everything else for the time being and resulted in unconscious mis-statement by the parents.

The onset of the paralysis, however, may occur during the first twenty-four hours or may be delayed until the second week. However, the average onset is on either the second or the third day.

The typical paralysis is that which shows a loss of power in some muscles with flaccidity. It seems clear that the portions of the cord remote from the brain are most commonly affected, as is shown by the lower limbs being most often affected.

The first onset of the paralysis is never an indication of what the ultimate result will be. In a few instances, the progressive nature of the paralysis is very marked, muscle after muscle becoming affected in succession. But the commoner occurrence is to observe a more or less widespread paralysis at the onset with subsequent clearing up to a very decided degree. Within a few days of the onset the preservation of the normal electrical irritability will enable the examiner to pick out the muscles which are capable of more or less complete regeneration. In no other condition is there such an early loss of response to the faradic current.

Often the varying degree of loss of function and the marked character of the tendon reflexes will give one a clear idea as to the degree and extent of the permanent paralysis.

The tendon-jerks are rapidly lost in the affected limbs, but this loss depends upon the distribution of the paralysis; there may be extensive paralysis of the legs with no loss of the knee-jerk, so long as part of the quadriceps extensor, particularly the vastus internus, is intact.

Atrophy of the musculature may be present as early as the end of the first week, although its later occurrence is the rule.

The histories of two cases prove most serviceable here.

A family of two adults and four children arrived in this borough from California on September 26. They immediately moved into a house of modern equipment, detached and never before occupied. On October 9 the baby, an infant of eight months and eleven days, had a fall but was apparently uninjured. On the following day fever was present with vomiting and constipation. On October 11 it was discovered that both lower extremities were paralyzed. When I saw the infant in consultation with Dr. Blackmar there was a flaccid paralysis of both lower extremi-

ties and absolute loss of reflexes except of the toes of the right foot. The temperature then was 100.2° F.

This infant had been fed from birth upon milk which was peptonized and finally sterilized in the home. The whole process of its preparation was done by the mother. Nothing else had ever been given to the infant except boiled water. I went over very thoroughly with the mother the process of preparing the infant's food and she was correct in every detail of preparation and handling. There was no possibility of food infection.

On October 17, seven days after the onset of symptoms in this infant, his sister, a young miss of twelve years and one month, complained of severe headache. On the eighteenth, after the administration of castor oil, her headache was relieved, but fever and malaise were present. These continued on the nineteenth. On the evening of the nineteenth she retired with these indefinite symptoms and at 9 P. M. arose from the bed and walked some distance to the toilet and returned. At 11 P. M. she awoke unable to turn over in bed and calling for aid it was discovered that both lower extremities were completely paralyzed.

Before daybreak both arms were involved in the paralysis and the voice was so weak that it was difficult to hear her. On this morning (the twentieth) all four extremities became cold and cyanotic, but particularly the left ones. The right side of the face was also paralyzed. While there was a slight effort of the chest muscles to carry on respiration when I first saw the child, the abdominal respiration very markedly predominated. The bladder was full. The neck musculature was rigid and any motion caused pain. Death took place at 11 P. M. that night (October 20) from respiratory paralysis. This case was autopsied by Drs. Flexner, Lewis, and myself the following morning. Here then was an instance of two cases developing after removal into an affected district, one probably from direct contact with her infant brother, but with hygienic surroundings ideal and the food in at least one of them sterile.

Hernial protrusions of the abdomen are not uncommon owing to the flaccid paralysis of the musculature of the abdomen. Some of the protrusions are hardly noticeable while others are as large as a large grape-fruit. Crying brings them more into prominence.

The writer has cautiously avoided any reference to the cerebral forms of the disease because this is to be taken up by another speaker.

SURGICAL TREATMENT OF ANTERIOR POLIOMYELITIS.*

BY
DEXTER D. ASHLEY, M. D.,
New York City.

IN my remarks to-night it is to be understood that we are dealing with those conditions and deformities which have been produced when the paralysis has been in evidence at least one year.

Many, apparently hopeless, debarred from locomotion, may be so benefited by a comparatively simple operation as to enable them to assume the upright position in a brace or on crutches, and move around much to their satisfaction and to the advantage of the nutrition of the limb.

In these operations it is undertaken to accomplish one or more of five things:

1. To restore the muscle balance, overcoming the tendency to deformity in the weakened limb; this by tendon shortening, tendon lengthening, tenotomies, fasciotomies, tendon and muscle transplantations and nerve grafting, silk ligaments and skin flaps.
2. By arthrodesis, to secure greater stability in a limb having a partial luxation at the joint, as in the astragalo-scapoid in the foot, or a flail-like joint at the shoulder, knee or ankle.
3. To so correct the deformed limb as to facilitate the application of a brace that would permit the patient to be about.
4. The removal of a greatly deformed and useless member, in order to substitute an artificial extremity.
5. To establish a return of the nerve current to the paralyzed muscle by the grafting of the affected nerve into one that is intact.

The more marked deformities frequently admit of the most satisfactory results from surgical interference; as a foot, deformed by the action of strong adductor muscles, opposed by weak paretic or paralyzed antagonists, offers material for the transplantation, tendon lengthening, tendon shortening or nerve grafting. By judicious distribution of the power remaining, we restore the balance and usefulness of the limb.

*Symposium, East Side Physicians Association, January, 1911.

The most hopeless cases are those marked by slight contracture deformity after years of paralysis, as in a short limb, with total paralysis, which affords no basis to work upon except for an arthrodesis or as a brace holder.

The more radical operations of arthrodesis upon larger joints, tendon transplantation and nerve grafting should be approached only after careful consideration and study. Without these the result may be more deforming than the first condition. Each foot deformity requires a special study and careful mapping out of the course to be pursued in order to make a proper distribution of the remaining power.

First, it is necessary to know the condition of the muscles. A muscle that has remained stretched for a long time by a powerful antagonist would seem to be paralyzed. I have been agreeably surprised on several occasions to find that my patients had power in the anterior group after I had lengthened the tendo achilles for the relief of marked drop toe or talipes equinus. This accentuates the necessity for a careful study of all muscles that have been stretched.

Hoffa of Berlin did not depend upon electrical reactions in these cases, but insisted upon making an exploratory incision over the belly of the muscle in question. Pink or reddish muscles are only partially paralyzed. This is very useful knowledge in making tendon transplantations.

When the deforming factor is slight, because of a paretic condition existing in one group of muscles or which has existed and has been opposed by a strong antagonist, combined with the action of the force of gravity and weight bearing and the bed clothes pressure, as in drop toe, the forcible correction and tendon lengthening, followed by a sustaining plaster-of-Paris dressing from three to six months, will be sufficient if the after-treatment is carried out with careful muscle training, night brace to protect from undue pressure, and the wearing of a modified shoe to protect against any deforming tendency. This treatment must be followed up carefully throughout the growing years to prevent reversion or deformity in the opposite direction. The foot should be kept in the plaster of Paris until it is established in the new position of normal development.

In selected cases, a gentle correction followed by daily passive motions and massage, combined with night braces, may be followed by a most gratifying recovery of overstretched muscles. Such results so impressed the profession some years ago as to

suggest the treatment of placing all paralytic patients in plaster of Paris, in a normal or overcorrected position, when any deforming tendency was noted, cutting out a fenestra in the plaster over a motor nerve point to admit the application of electricity. Such treatment may be an apparent wonder worker in paretic conditions.

Tenotomies.—Subcutaneous tenotomies, as perfected by Stromeyer in 1831, have been an efficient, safe and easy means of relieving many deformities. Subcutaneous tenotomies of all normal foot tendons are done with expectation of full repair, however widely the severed ends are separated. Until recently much difference of opinion existed as to which tendons should be so treated. Ten years ago I saw the work of Mr. Little, in London, the son of the assistant of Stromeyer, who popularized the subcutaneous tenotomy in England. He was careful not to separate the divided ends until ten days had elapsed, when the deformity was corrected, believing that an immediate separation would lead to irritating adhesions and poor union.

Young, of Philadelphia, has found by experiments upon rabbits that the separation after several days, of the divided tendons, resulted in very much weakened repair. Where correction was immediate, repair was perfect. Whitman would encourage weight bearing in eight to ten days, the limb in plaster of Paris to stimulate the reparative process in the tendo achilles, and finds that tendon repair is usually so perfect as not to be distinguished microscopically.

In the operation of simple subcutaneous tenotomies no small skill may be displayed in mapping out the required structures and avoiding nerves and arteries. The outer hamstring tendons (biceps) should never be attempted subcutaneously because of the intimate relation of the peroneal nerve.

Suppuration occurs very rarely after a subcutaneous tenotomy; still every precaution should be taken to secure an aseptic field. The vigorous use of the tincture of iodine, or of alcohol, is an excellent practice as a finishing procedure before using the tenotome.

The ordinary tenotome is made too long and round in the blade and weak in the shank. A straight thin blade, $1/2$ inch long and $1/4$ inch broad, on a strong shank, will be found the proper size for usual tenotomies.

The tendon is made tense and brought into relief by manipulation. The tenotome is inserted with the flat side of the blade

under the tendon, the cutting edge is turned, and the tendon is severed by a short sawing motion, when the last few fibers give way with a snap or tearing sound. Thus we may avoid severing the entire tendon sheath. This is an important part of the technic and should not be omitted. The deformity is immediately corrected, and the limb put in overcorrection, taking into account the connective-tissue contraction. Special care must be taken not to place a compress over the point of the separated tendon, as this would prevent the formation of blood clot and consequently the normal reparative process. If a tendon is not repaired, the cause may most likely be ascribed to this.

While a tendon in a moderately strong limb with no marked vasomotor disturbances can be divided subcutaneously, with expectation that a strong connective tissue will fill the gap, resulting in the formation of a strong tendon, some surgeons have noted a considerable atrophy of the muscle substance and the loss of tone or function in a muscle so treated. To obviate this end, various open tenotomies with a Z cut and stretching of the tendon have been devised. The most unique manner of lengthening the tendon is that devised by Dr. Russell Hibbs, in which the tendon is not severed, while the tendon sheath is carefully preserved. This operation is especially applicable to the lengthening of the tendo achilles. Dr. Hibbs insists that this is the only surgical means of lengthening the tendon and maintaining the entire function of the posterior group.

Tendon Shortening.—By tendon shortening we adjust the tension of recovered muscles and enable them to exert their normal power in contraction. The operation denominated "tenodesis" by Max Reiner enables us to use the tendons as ligaments, and offers a means of producing support against deformity. This feature can be aided much more effectively by the use of silk, carried through fatty tunnels and sewed into the open periosteum above and below the joint, as it is not subject to stretching. As shown by Lange, Soutter and others, a connective tissue is proliferated around the silk, which after a year or so acts much as a ligament. Here again it is necessary to know the condition of the muscle, as a bad condition might be made worse by putting tension on a weak or overstretched muscle.

The writer has devised a tendon folder which facilitates the ease and quickness of this operation. On several occasions I

had used the common carpenter's calipers, and a search of the various instrument houses to find a surgical instrument to take the place of these calipers was fruitless. This instrument may be used also in tendon transplantation to adjust the tension of the transplanted tendon. By this method the tendon shortening is accomplished without loss of tissue and if the stitches tear out the tendon is not lost.

The tendon is lifted out of its sheath, the calipers are separated a little wider than the short diameter of the tendon. One point is passed under and the other over the tendon. By a half turn of the tendon folder, a three-ply fold or tuck is made in the tendon. The arms of the tendon folder are then separated by the screw, increasing the length of the tuck until the desired tension is obtained. The ends of each fold are then abraded and sewed through and through with braided silk, tying the silk tightly. As Silver has shown us, it is almost impossible to make a tendon necrose by a tight ligature. The tendon is then returned to the sheath and the wound closed.

Tendon Transplantation.—Tendon transplantation has held out great hopes for the paralyzed; given new life by Nicoladoni, in 1880. The technic has been largely perfected by Lange, Schantz, Goldthwaite and others—an advance in surgery only permissible by our late aseptic procedures. To get a satisfactory result one should produce a bloodless field. The transplanted tendon should be attached to the periosteum or bone. If too short in itself, it may be lengthened by quilting in braided silk, boiled in bichloride 1-1000 and soaked in paraffine. The muscles should pull as nearly as possible in a straight line from the point of origin to insertion. It is a conservative procedure never to sever the power-giving muscle from its insertion, but take a generous slip from its tendon to make the new attachment. The slow repair of the transplanted tendon denuded of its synovial sheath and periosteal attachment requires a long immobilization in plaster of Paris, from five to nine months to prevent its tearing away from the point of attachment.

We will be disappointed if we expect a strong functional use of all muscles transplanted. Many of the improved functions of the foot will be due to the improvement of position or balance. The transplanted tendons acting as reinforced ligaments hold the foot in a more stable position.

The great source of failure in tendon transplantation is where

the operator tries to substitute a weak muscle to do the work of a strong one. The patient frequently expects too much, when an amelioration of the condition only could be hoped for. For example: Given a paralysis of the thigh muscles, except the tensor vagina femoris (permitting weak flexion of the thigh) and the outer and inner hamstrings (paretic) permitting weak flexion of the knee, and a paralysis of the internal and anterior group of the leg, resulting in the deformity of talipes valgus. By a lengthening of the tendo Achilles and a carrying of the peroneus longus and brevis across the ankle, making an insertion in the scaphoid, assisted by an arthrodesis in the astragalo-scaphoid joint, we place the foot in balance, remove the deforming factor and secure a much more stable and stronger foot; no more can be expected. We will still have a weak limb, because we have not been able to add to the strength of the paralyzed adductors and rectus femoris of the thigh.

A sufficient time, from one to three years, should have elapsed to secure all probable recovery. Many consider it better to wait until the patient is eight to ten years old, as up to that time the child is light and moderate deformity would not hinder locomotion. However, with sufficient time elapsed, I like to have the limb growing in the normal line before school age.

In a preliminary operation, all resistant deformities should be overcome by forcible correction, tenotomies and fasciotomies, before the finer operations of tendon transplantation, tendon shortening and nerve grafting are attempted.

The writer wishes to call attention to the new use for an old instrument. The Noyes alligator ear forceps will be a great convenience to the operator in carrying tendons and silk ligaments through fatty tunnels to new points of insertion.

Given a case of talipes equinus varus, the tendo Achilles should be lengthened, a slip from the outer edge brought forward and secured to the base of the fifth metatarsal, unless we wish to use a silk tendon instead of this. Should the tibialis anticus be at fault, it may be split and one-half carried to the insertion of the peroneus brevis. This slip will have to be lengthened by the use of braided silk quilted into the end of the severed tendon after the method of Lange. In all of these operations it is understood that all resisting deformities have been overcome by a previous operation.

Talipes Valgus.—This deformity is generally produced by a partial or total paralysis of the tibialis anticus, tibialis posticus,

flexor communis digitorum and flexor longus pollicis. This deformity may be relieved by an arthrodesis at the astragalo-scaphoid joint and a transplantation of a portion of the extensor longus pollicis into the scaphoid at the point of the navicular process. Again, I have removed one or both of the peroneal tendons and carried them through the tendo Achilles when that tendon was lax and attached them to the periosteum at its inner edge, the tendo achilles being strong, peroneal ends are carried across the foot and planted in the scaphoid.

Talipes Calcaneus.—If the peroneal tendons or tibialis posticus are intact, one or all may be carried to the insertion of the tendo Achilles; the tendo Achilles should be shortened and the plantar fascia lengthened. Whitman has removed the astragalus and dislocated the foot backward, using the peroneal tendons with better leverage as flexors of the foot with excellent function as well.

Talipes Calcaneovarus.—In this deformity, produced by a partial paralysis of the posterior and outer group, the tibialis posticus should be used to strengthen the tendo Achilles and the tibialis anticus lengthened. A silk ligament may be used to reinforce the outer side of the foot, or a generous slip from the tibialis anticus may be carried to the cuboid or the insertion of the peroneus brevis or peroneus tertius.

A foot entirely paralyzed or a flail ankle may be made more secure by performing an arthrodesis at the ankle, removing all the synovial cartilage on the astragalus, tibia and fibula and putting the foot up in plaster of Paris for four or five months.

The Knee.—Lange restored the extension of the knee by taking the sartorius or one of the biceps and the semitendinosus and carrying them forward to the patella and then by a silk ligature to the tuberosity of the fibula. A flail or very weak knee can be treated by excision using the patella as a bridge to secure greatest mobility; this will necessitate less shortening to secure ankylosis.

The Hip.—Arthrodesis will seldom be necessary at the hip, and only in cases of total paralysis of the thigh muscle; the contractures in abduction and adduction can generally be reduced by tenotomies, fasciotomies and stretching in one or two sittings sufficiently for the application of a brace.

Wrist.—Drop wrist has been improved by Robert Jones by his cock-up splint and by the transplantation of the carpal flexors into the paralyzed extensors. Tubby, of London, has also made

the pronator radii teres into a supinator by passing it through the interosseous membrane and attaching it to the outer side of the supinated radius.

Elbow.—The elbow may be fixed by arthrodesis; the power of flexion may be regained by taking a portion of the triceps and securing it to the tendon of the biceps. Strong extensors may be combated by taking out a diamond-shaped piece of the skin on the inner surface of the elbow permitting healing in right angle flexure as practised by Hoffa.

Shoulder.—The shoulder may be made firm by arthrodesis when we have a flail-like joint. Tubby has made numerous transplantations. The angel wing resulting from the paralysis of the serratus magnus was cured by transplanting the lower part of the pectoralis major in the serratus magnus. Hoffa greatly benefited the paralysis of the deltoid by using a large mass of the trapezius to the deltoid and putting the arm up in abduction for two months.

Nerve Grafting.—In recent years this has been a great source of hope for the unfortunate lame, since Sick, in 1897, grafted the paralyzed musculospiral into the median. The greatest success may be expected in giving power to a single paralyzed muscle. The operation requires delicate technic, with small instruments and very fine chromicized catgut. Spitzzy of Gratz, a co-worker of Hoffa and Lange, after animal experimentation, describes three forms of nerve grafting:

1. The central transplantation, when a portion of the sound nerve is carried through a longitudinal slit in the paralyzed nerve, and there fixed.
2. The peripheral, where the paralyzed nerve is cut off and carried through the center of the sound nerve, the proximal end being buried in a muscle, or in the intact nerve higher up.
3. The peripheral central form, when a portion of the paralyzed is carried to the sound nerve.

Peckham, of Providence, restored power to the extensor muscles of the foot by taking two branches from the internal popliteal into the external popliteal. Young, of Philadelphia, in 1902 exposed the peroneal nerve at its division, and took a part of the musculocutaneous end and carried it to the tibialis anticus, which was followed by considerable recovery of power. Recovery of sensation has been reported in thirty-six hours after nerve division, and return of power in from four to six months.

In all treatments upon the paralyzed member, the best success is only to be gained in careful, prolonged after-treatment, involving fixation during the healing stage, and later, careful massage and electricity, and in some cases a sustaining brace. All cases should have careful supervision during the growing years.

346 LEXINGTON AVENUE.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Meeting of January 19, 1911.

GLENTWORTH R. BUTLER, M. D., *Vice-President, in the Chair.*

This meeting was held under the auspices of the Section on Neurology and Psychiatry.

Subject: Criminality.

SOME SOCIAL CAUSES OF CRIMINALITY.

O. F. LEWIS, general secretary of the Prison Association read this paper. Many conditions obviously predisposed to criminality and among them were the following: poverty which intensified the craving to possess the property of others; child labor begot the adult vagrant's physical incapacity; the night messenger service, sending young fellows on errands to houses of questionable reputation, might lay the basis of a life of vice; children playing on congested streets might gain contempt for city ordinances; industrial accidents disrupted families and threw sons and daughters on their own resources; small wages and overwork might hurl frail women into the street.

Mr. Lewis asked their attention, not to general social causes of crime which were fairly apparent, but rather to a brief scrutiny of certain conditions still prevailing in the many correctional institutions. The results of these conditions, after the discharge of the prisoner, became in their turn social causes of further crimes.

The following propositions should be accepted: 1. No two individual crimes were alike in motive, nor were they conditioned by exactly the same causes; 2. the treatment accorded an offender should be adjusted to fit the offender, not the offense; 3. the purpose of the deprivation of liberty was not alone the punishment of the offender, but also the protection of society,

the deterrence of others from the commission of crime, and the reformation, or at least the improvement, of the offender as a normal member of society; 4. society, in depriving an individual of his liberty, obligated itself not only to give the prisoner adequate shelter, furnish him a reasonable amount of labor, and to make of him if possible a better citizen. They were not although meeting these requirements even in their best institutions. With the fullest recognition of many admirable phases of the administration of their reformatories and prisons, he called attention to certain other parts of prison administration still very incompletely covered, yet which *must* be adequately covered if they were to realize the purposes of imprisonment.

Elmira Reformatory was in many ways the standard reformatory not only in the United States but of the world. Yet the senior physician, Dr. Christian, recently stated that his record extending over several years showed that at least 39 per cent. of the inmates were mentally defective, and 70 per cent. below a normal physical standard.

In summing up Mr. Lewis very briefly, in the form of recommendations, believed that the following developments were essential in the institutional and noninstitutional treatment of offenders:

1. The rational extension of the suspended sentence with the accompanying probation system.

2. Adequate physical and mental examination of all persons committed to correctional institutions, such examinations to take place not only at their entrance to such institutions but as often as necessary during their term of imprisonment.

3. The adequate treatment of the mentally defective and the diseased in correctional institutions, not only by proper medical authorities, but also through the provision of separate institutions when necessary, such as custodial asylums for the criminal feeble-minded, etc.

4. The development of an adequate and systematic parole system, necessary elements in which should be a competent parole board, adequate study of inmates seeking parole, a period of parole supervision covering if necessary a period of time equivalent to the maximum sentence for the crime committed, an adequate staff of parole officers, the development of employment and relief agencies for released and discharged prisoners, the return of delinquent paroled men or women to prison for violation of parole when insufficient extenuating circumstances existed.

5. The further classification of offenders, so as to separate young misdemeanants from the older through the establishment of a state reformatory for misdemeanants; the separation of habitual tramps and vagrants from other offenders through the establishment of one or more compulsory labor colonies; the separation and proper treatment of inebriates and alcoholics through the establishment of one or more hospitals and colonies for this class, and the establishment of boards of inebriety with the

probation system as advocated by the State Charities Aid Association.

6. The extension of the study of defective delinquents within and without institutions through the work of a committee such as the Committee on Defective Delinquents just appointed by the Prison Association of New York.

THE CRIMINAL FROM A MEDICAL POINT OF VIEW.

DR. ROBERT B. LAMB, superintendent of the Matteawan State Hospital for the Criminal Insane, said that in the search of physical abnormalities one might go back as far as Socrates, if so inclined. Nearly a century ago Grohman had noted the prevalence of certain physical abnormalities in criminals that were of common knowledge to-day. In 1820 he wrote: "I have often been impressed in criminals, and especially in those of defective development, by the prominent ears, the shape of the cranium, the projecting cheek bones, the large lower jaw, the deeply placed eyes and shifty animal-like gaze." The Italian school wrote so interestingly and convincingly that their readers were led to believe that those of the criminal class were easily and surely identified by certain physical characteristics alone, but nowadays they realized that, while a measure of truth was present in these writings, the elementary comparisons were not altogether fair. There were well-defined limitations to the findings of the Italian students. While the cranial measurements of criminals presented certain abnormalities, these measurements were usually reflected in the extremes and not in the average. While the general average of the criminal heads was much the same as in ordinary people's heads, in the criminal heads there were a greater number of small heads and a greater number of large heads. The possessors of these small heads had more frequently committed crimes against property while the possessors of the large heads had more often committed crimes against persons. These conclusions had to be governed to a certain extent by racial characteristics and locations. Receding foreheads were early indicated as a common attribute, but were now considered significant only when the other dimensions of the cranium were taken into account and found wanting. Lombroso found that in the criminal the orbital capacity was larger than normal and that undue exaggeration of the orbital arch and frontal sinuses was frequently in evidence. Lack of cranial symmetry was reported as common but the real question seemed to be how much asymmetry was necessary to bring a head within the so-called criminal type. Each and all of these malformations from time to time appeared in ordinary individuals without criminal traits, but they existed less frequently and were rarely in the same combination shown in the persistent criminal. The same degenerative abnormalities appeared with much greater frequency in male than in female criminals. With all these

variations from the normal present externally it would be strange indeed if no internal variations were noted. Broca noted that the presence of numerous confluent fissures indicated a defective degree of development. Nearly 50 per cent. of all cases examined by Lombroso and Flesch showed signs of a well-defined meningitis. In some cases there was reason for believing that there was defective formation of the intimate structure of the brain which defied the powers of the keenest observers. The author believed that the internal stigmata were fully as common if not more so than the external. Many writers had called attention to the lack of facial beauty among criminals. Dr Lamb had watched 1400 men in one of the State prisons march in for their mid-day meal and out of the number scarcely a dozen possessed faces that would command respect or inspire confidence. The International Prison Congress held in Paris recommended physicians to go to the prisons to study psychiatry and Dr. Lamb believed this recommendation sound. As the result of such training the superintendent of the Elmira Reformatory weeded from his population seventy-four men, too much deranged to comply with the school requirements of the Reformatory, whose presence was demoralizing the entire institution. Bianchi classified criminals from the mental standpoint into four distinct classes. In the first he included those who showed a poor intellect, with little moral development. Second, those showing average or superior mental development, with moral sense absent. Third, those with a developed normal sense who were able to get on under ordinary circumstances, but who were without positive powers of resistance when their minds were crossed by emotional currents. Fourth, those once showing normal moral condition, which was later destroyed by disease or vice. The most apparent mental defect in the criminal was simply a decided weakness, eminently disproportionate if comparison was made with the great body of citizens. The reasoning and judgment of the adult prisoner was, as a rule, inferior to that of the youth of the free world. He had little insight into his own condition and was vain and egotistical. He took much risk for small gain and failed to profit from his first lesson when imprisoned. The reports of the Elmira Reformatory showed that 45 per cent. of its inmates had been in previous contact with some branch of the law previous to reformatory sentence. As time went on these habitual offenders had few friends in the world at large and felt more at home in prison than outside.

There was on the statute books a law for just this class of chronic offenders which provided for their life care, but it had been very little used. Two years after its enactment only two sentences had been pronounced under it, while 103 prisoners were admitted, known to be eligible for this sentence. Absence of the moral sense meant in an individual distinct antisocial tendencies. Such individuals were a constant source of danger to the community. In some cases the physician might postpone or abort

inflammatory processes provided the patient was seen early enough. There was, however, a class in which there was a total failure of development so far as this sense was concerned. Treatment in these cases should be begun early and continued until the skilled observer deemed it safe to try his pupil in a free world. Even then the most skilled man was not certain of his pupil. Dr. Lamb spoke of a class of criminals rarely referred to by the criminologist and these were the insane criminals who committed criminal acts because of active disturbance of the mental process. These did not belong to the criminal insane; their previous careers had been honorable, and clean, they had reached a superior standard of development and broken down after its attainment. He also spoke of that class who were criminals from failure to develop and urged the need of making provision legally for their care. This was necessary for the welfare of the state as well as for the individual and the afflicted family.

LEGAL ASPECTS AND PROBLEMS OF PREVENTIVE MEASURES.

The HON. JULIUS M. MAYER considered this phase of the question and quoted from letters he had received. One letter was from Judge Merritt W. Pinckney of the Juvenile Court, Chicago, in which the following statements were made:

"I referred your letter to Dr. James A. Britton, who is the attending physician at the Juvenile Court, requesting him to give you a statement of his method of examination of children brought to the Juvenile Court."

"I desire to call attention to one or two matters appertaining to these examinations by our resident physician and nurse. Preliminary to the hearing of a case of a dependent boy or girl, or of a delinquent boy or girl (where the children *have not been in the Detention Home of the Juvenile Court*), there is no examination of the genitalia or vaginal examination of the girls, without the request or consent of the father or mother. As Judge of the Juvenile Court I have never felt that I had the legal right to have such examinations made without the consent of the parents as an aid to determining the dependency or delinquency of these girls, or of the boys either for that matter."

"After the hearing of the case of a boy or girl, and he or she had been found dependent or delinquent, and it becomes necessary to send such boy or girl temporarily to the Detention Home or to one of our institutions it has been the policy of the Juvenile Court to have such examinations made before allowing the children to mingle with other children at that time in the home or the institution. You will readily understand that such a course was absolutely necessary in order to protect the children already in the Detention Home or in the institution. Whenever the boy or girl is taken directly from the court (after the decree of delinquency or dependency) to an institution the examination referred to is often made by the local physicians of

such institutions. Of course, when the children are not taken direct to the institution and are sent to our Detention Home our resident physician and nurse attend to the examinations."

DR. JAMES A. BRITTON, attending physician to the Juvenile Court in Chicago, wrote a letter to Judge Pinckney as follows:

"Before the physical examination work was taken up in the Juvenile Court it was discussed by a great many people who are interested in the welfare of children and decided at that time theoretically at least it would be of a great advantage not only to the child but also to all of the people who are attempting to handle the children's cases."

"The plan of examining all children who come into the Juvenile Court has been carried now since September, 1907, and it is our experience that not only has the examination proved to be very desirable, but seems to be an essential thing in the proper handling of children."

"Theoretically all of the young children who come into the court should have had this same examination in the regular public schools so that when they appear in the court they could bring their physical record from the public school as an essential part of the case record. If this were done a large part of the examination of children now done in the court could be eliminated. It seems too bad that a child should drop out of school, get into trouble and then, after reaching the Juvenile Court, have it found out that he cannot hear or see as a normal child should, or that he had some mental defect that makes it impossible for him to be treated as other children, and until a careful, routine school examination is made these things are bound to happen every day."

"A further reason for the examination of children coming into the Court and the Juvenile Detention Home is the same reason that applies to any institution where children are brought together, namely, that it is absolutely essential that every means be taken to guard against contagious diseases. Under the head of contagious diseases is included the venereal infections. In the light of investigations in recent years which have shown the contagiousness of the gonococcus infection, especially among little children, it is almost criminal to bring little girls together in any sort of a home without first learning whether there is any such infection or not."

"The examination of the boys consists of a more or less complete examination, with the child stripped to the waist. The genitalia are also examined for malformations and diseases. The examination of girls is less thorough, only sufficient amount of clothing is removed to make a proper examination of the heart, and if there seems to be indication of some lung trouble, the entire chest is bared for that examination. All girls who are brought into the Detention Home are given a microscopical examination of the vaginal secretion. This specimen of secretion is taken by the nurse who is especially instructed in the technic and

vaginal examinations by the doctor himself; they are only made where there is some gross evidence of disease, or some special reason, and then only with the approval of the parents. The girls that are brought into the court and taken away the same day without being kept in the Detention Home have a vaginal examination made only in special cases when it is the wish of the parents or guardian."

THE MENTALLY DEFECTIVE DELINQUENT AND THE LAW.

ERNEST K. COULTER, clerk of the children's court, New York County, read this paper. He said that the stirring of men from centuries of slothful sleep to a recognition of even the most fundamental of the child's rights had indeed been a slow process. It had even been the story of property rights above human rights. A half century ago they were still hanging children; a little more than thirty-five years ago they protected the dog and the horse from cruelty, but not the child; it was only within the past decade that they ceased arraigning child victims of bad environment in company with the city's thugs. Being the weakest member of the community, the child was the last to come into its own. The establishment of children's courts was one of the signs of an awakening public conscience. These institutions were throwing light on much that was still barbaric in the community's treatment of its weaker members.

One of their lessons was that the municipality itself was responsible for the environment that brought thousands of its children each year into conflict with the law. The particular, glaring sin of the state against its children to be dealt with was that which thrust delinquents of tender years who were mentally irresponsible into ordinary reformatory institutions. These children could be classed as neither imbecile nor insane, but were those exceptional children, victims of environment or congenital causes, which irresistibly predisposed them to crime. In forcing the commitment of the defective child into the ordinary reformatory institution, the state was blind to its cruelty to the child.

The defective, or exceptional class of children, included not only those whose minds were stupid and who were at the mercy of the lowest instincts, but also some abnormally bright and unbalanced children who unchecked developed into criminal geniuses before they were out of their teens. The rescue of one such child might mean more to the community than the saving of an institution full of ordinary children. The intention was not to make it appear that a large proportion of the children who get into the Juvenile Courts were mentally deficient. After a near view of about 80,000 cases of children under the age of sixteen who had been brought before a single tribunal with which it was his privilege to be connected, Mr. Coulter positively asserted that the vast majority, who were charged with getting into conflict with the law, were absolutely normal from the standpoint of their

surroundings. That was, these children were no different from others who had grown up in the same kind of environment. There were a lot of sentimentalists who would have it appear that every other child arraigned for juvenile delinquency, or because of improper guardianship, was abnormal. They were doing much harm.

At a conference of a committee to bring about some recognized and established help for these delinquents, juvenile and adults, who were mentally defective, figures were presented which showed in a startling manner the need of special treatment of these unfortunates, and particularly at the time of adolescence. The Superintendent of the Bedford Reformatory for Women, for instance, reported that an examination of thirty-five of the inmates showed that thirteen were subnormal. This superintendent declared without hesitation that 33 per cent. of the inmates were mentally defective. It was further reported that 39 per cent. of the inmates of Elmira Reformatory were mentally defective and 70 per cent. were physically defective. If while these defectives were still children the causes of the abnormal condition which predisposed them to prey on society could be removed, they would have been saved to useful citizenship. With such cases the time for relief was in youth.

The Children's Court of New York County alone handled about 10,000 cases each year, thus being a great clearing house for juvenile troubles. Practically one-half of them were taken into custody because of alleged trivial offenses, acts growing out of the child's normal instinct to play. The state and private charity did not hesitate to establish institutions for groups of 200 ordinary children who had been found without proper guardianship or were juvenile delinquents; yet with a conservative estimate of 2 per cent. of mental defectives there were 200 of these unfortunates coming into the Children's Court of New York County alone each year, not to mention the three other children's courts in the Greater City. While there were more than thirty institutions to which the court in New York County could commit children, there was not one where those of the mental defective type could be sent on legal commitments. To show what actually happened in the Children's Court in these cases Mr. Coulter said he was going to visualize, reporting several interesting cases. One of the most interesting was the following:

A frank-faced youngster of fourteen, apparently a junior Chesterfield, was arraigned in the Children's Court a short time ago charged with having stolen a large amount of money from a department store by a series of clever forgeries. His attractive face, polite speech and quiet reserve set off by his patient ties, his emaculate turn down collar and neat knickerbockers marked him in strange contrast to the motley throng of boys that usually faced the judge. It seemed incongruous that such a lad could be charged with swindling. Even the detective who had taken him into custody was half inclined to ask that the complaint

be dismissed; he feared he had made a mistake. But to the fatherly, keen minded judge, who had a long talk with the boy he finally confessed that he forged the checks on which the complaint was based. This boy who had come out of the west had edited a newspaper of which he was the founder when eleven years of age. His father was a poor printer. With no other collateral than his unmitigated nerve he had travelled through the country and stopped at the best hotels. He was living at the Waldorf-Astoria when arrested. He had an interesting interview with Russell Sage and, he was told, that he had even induced the late financier to invest in one of his western schemes. This, perhaps, spoke more for the boy's persuasive powers than anything he could say. Following the announcement of the boy's arraignment in the Children's Court there came a stream of letters from men and women who had met him in parlor cars, in hotel lobbies, in restaurants east and west. One level-headed priest wrote that he had spent the greater part of the day in conversation with the lad on a railroad train. He declared that although the boy was quiet in demeanor he was chronically in a state of mental exaltation. When this young marvel was committed to a reformatory, the officers of the institution were urged, for the boy's own good, to keep him in the background and away from visitors. About three months later when as a guest at the institution among 500 others at a Washington's birthday celebration, he was amazed to see in the spotlight, holding the center of the stage, in powdered queue and cocked hat, this very lad as George Washington himself. The courts commitment had been indeterminate. In a few months he had talked himself out of the institution and into a Washington bank. His shrewd mind quickly grasped enough important details of that business to enable him to disappear soon with a considerable sum of the bank's money. He was arrested later in a western state and sent to a reformatory. He declared later that he would never again commit a criminal act. On his release he obtained employment as a traveling salesman. Between midnight and dawn in a Kansas City hotel he turned on the gas and was dead when discovered. Beside his body was found this note: "Worry, unhappiness, undeserved condemnation and hatred of doing wrong are the causes." This note showed that he realized his own mental irresponsibility. Had this boy's marvelous abilities been properly guided and could he have received treatment at the first indication of his criminal tendencies, a great name might have been added to the roll of the country's great financiers.

There had been exceptional children, usually girls, who, because of fancied grievances had attempted suicide. Some boys of the exceptional class showed morbid cravings for sympathy and marvelous inventive genius. One of these lads who had never been off Manhattan Island told of the slaughter of his parents in South Africa, of wandering from port to port with such cun-

ningly devised detail and plausibility that he kept the court guessing for a week. These children may be placed in one of the two great classes of exceptionals, those with acquired or with those with hereditary mental disturbances predisposing them to crime. The number of children in the public schools of New York City whose mental defectiveness was recognized was 7,000 or 1 per cent. of the total school attendance. The criminal tendencies of those who were admitted to the ungraded class often caused them to commit offenses that led to their arrest. At present there was no municipal provision in New York City for sifting out the defectives in the custody of the authorities. There were no special institutions to which such cases might be committed. The same condition existed throughout the country. There was indeed need of a general awakening to the fact that a number of mentally defective and exceptional children were arraigned in the children's courts each year and although they were not responsible for their acts they were being thrust into ordinary reformatory institutions. Here there was nothing for them but acute suffering and, in the end, habitual criminality. The causes of the mental conditions of a large number of these unfortunates could be removed and they could be saved to useful citizenship. In its gradual abandonment of antiquated and barbarous methods of treating child offenders the state must recognize that the defective child required special treatment. In fact, they could ill afford to hesitate longer in taking this step in line with humanitarian progress.

REV. DR. PARKHURST said that he was glad that the sentiment displayed was going to become so widespread, but that they should discriminate between two different classes of children in their endeavor to give every child a fair chance. He asked Judge Mayer if he believed that a child who was normal both mentally and physically would become a law breaker.

HON. JULIUS M. MAYER replied that he supposed not.

REV. DR. PARKHURST asked the Judge another question. Inasmuch as a child is abnormal in his physical build, should he be responsible for what he did under the influence of abnormality?

JUDGE MAYER replied that the question propounded was rather too technical; the answer to it depended upon what abnormality was.

REV. DR. PARKHURST said that he asked these questions because of the delicate principles involved. He was aiming at the personal responsibility of the child. If a child was abnormal in his mental development, was he responsible? If he was abnormal in his physical development, was he responsible?

JUDGE MAYER said that if the child's abnormality was purely a physical one, he then would be responsible. The abnormality must be a mental one, the child must be legally insane, if he wished to escape legal responsibilities.

REV. DR. PARKHURST said that if the child had nothing abnormal, mental or physical, he ought not to go astray.

JUDGE MAYER said he was only expressing his personal opinion. The question whether a child who did a wrong act was normal or not could not be determined in all cases. All the law had to deal with was the statement of facts before the Judge. He must apply the law to the facts.

JUDGE DUELL believed that the proper time to discover whether or not a child was defective was when he was in school. If more attention was paid to this they would not have such a number of children in court charged with some infraction of the law.

JUDGE HOYT agreed with the sentiments already expressed.

MR. THOMPSON, superintendent of the Society for the Prevention of Cruelty, said that Society he represented looked for the cause of the delinquency; they endeavored to deal with normal children in the schools and employ preventive measures whenever possible. The Society looked after 51,000 children; 40,000 of them never reached the Children's Court; they were normal children. They were children without guardianship in their homes; by correcting conditions at home many children were kept out of the court. The mentally or physically defective child cannot be properly cared for in this city because there is no institution for their care. He believed that the purpose of the meeting was to point out the need of such an institution. Thirty per cent. of the cases seen last year required special institutional care. The medical and legal professions of the City of New York should get together and endeavor to bring about the organization of such an institution. The Society for the Prevention of Cruelty would aid so far as it could.

DR. MAX G. SCHLAPP, in order to show the increase in criminality among children because of inadequate methods that had formerly been used, quoted some German statistics of 1882. The statistics from one reformatory stated that 9.1 per cent. of its inmates were mentally defective; this was in 1904. One year later the inmates were examined by a trained man and he found that out of 200 boys, seventy-three were normal and the balance were defective; of the latter ten gave a history of epilepsy. This showed clearly that the examination of children in these institutions by a layman was not the proper thing; such examinations, to be of value, must be made by a trained man; if the examinations were not made by a trained man, the work was not complete. In another institution a trained psychiatrist found 50 per cent. of the inmates abnormal. The statistics showed a tremendous increase in criminality, showing that the examinations were not what they should have been. Probably 50 per cent. of the criminals was taken from that type of infants in a community, the type under discussion; the question naturally arose, could they check or reduce this class of individuals? This was the key to the solution. Instead of allowing feeble-minded individuals to roam about, the state should take care of them before they reached that period of life when they did criminal

acts; if the state would do this they might be saved to the community and become positive economic factors. This could be done if the means were forthcoming. Many mental defectives could be saved if such an institution was established. Dr. Schlapp advocated the establishment of some central station where the children could be examined. He also thought it should be insisted upon and laws passed making it compulsory for physicians to register the feeble-minded person; these reports should be kept secret. Then the central station would be in a position to help the general practitioner in determining what to do for a child and the possibility of saving it.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Treatment of Angiomata with Radiotherapy.—E. Albert Weil (*Paris m'ed.*, Dec., 1910) says that radiotherapy is the treatment *par excellence* for all kinds of angiomata, though it is little known. It is very easy of application and very effective. The author has published twenty-six cases treated by this method at the Hospital Trousseau. Of these fifteen were entirely cured; five are still under treatment; the remainder took but a few treatments. Ten cases treated and cured were raised growths, soft in consistency, the base prolonged deeply into the tissues. Three cases were deep subdermic angiomata, with insignificant alterations of the skin. Two cases were port-wine stains. It is necessary in deep growths to produce an inflammation. A white scar is substituted for a red mark. It is necessary to irradiate the lesion only, the other tissues being protected by lead shields perforated to expose the growth. If the growth is entirely superficial the full strength of the rays should be employed. If the lesions are both superficial and deep one should combine sittings with rays filtered by plates of aluminum of a thickness of one-half to one millimeter with sittings of the full strength of the tube. Hard tubes should be used. After the double irradiations a rest of fifteen days should be given. In angiomata with infiltrated bases and in plain angiomata at first stronger applications should be employed so as to get a more rapid action; when an erythema appears the applications should cease until the integument looks normal again.

Uric Lithiasis of Children.—G. Di Cristina (*Il policlinico*, Dec. 18, 1910) says that uric lithiasis is frequent among children, and its consequences grave. Young babies are subject to it. The author has made a study of this condition in young children by administering to them large doses of nucleinate of soda and then examining the changes of metabolism that occur. The patient is first placed upon a diet poor in nuclein, and this condition is contrasted with that existing after the administration of nucle-

inate of soda. The author gives histories of four cases in which this was done. It was found that the child affected by lithiasis eliminates an almost normal amount of uric acid before the elimination of the nucleinate of soda. The use of nucleinate of soda increases the elimination of nitrogen. From this it is deduced that the uricolitic ferment acted normally, that the elimination of uric acid was not retarded, and that the chains of the other ferments functionated normally. In these little patients there was no possibility of admitting the existence of gout. The author does not hesitate to refer the existence of this disease to a failure in the metabolism of nuclein. This disease is most often observed among the children of peasants in whom the mother's milk is supplemented by the use of cereals. We should not refer this condition to the inherited tendency to gout, but rather to the failure in proper feeding of the infants.

Deforming Fibrinous Osteitis with Osteomalacia.—Salazar de Souza (*Arch de méd. des enf.*, Dec., 1910) discusses fibrinous osteitis, referring to a case observed by him in the person of a boy born healthy and having had no sickness until the age of eighteen months. He had no symptoms of rickets. He fractured the left thigh three times between the age of eighteen months and seven years. Up to this time he had walked well and the fractures had healed easily. The thighs now began to bend gradually; the bones of the head, face and thorax underwent changes. The pelvis became deformed, having a triangular form. The intelligence of the patient was of a low order. The diagnosis of this condition is not easy. It must be differentiated from rickets; this is done by the history, by the different type of pelvic deformity, and by the evolution of the malady. In achondroplasia there are micromelia, large diaphyses and voluminous head with small face. In this patient there was hypertrophy instead of atrophy of the face, with a bending in of the diaphyses. The bones of the head are thickened. The beginning of the disease was very early, but progressive. The three symptoms of osteomalacia existed: softening, deformity, and multiple fractures. The pelvic deformity, as shown by radiography, was of the osteomalacic type. There was diffuse hypertrophy of the bones of the head and face and base of the skull. The eyes were wider apart than normal, due to diffuse periostitis of the craniofacial bones. A process of periosteal hyperplasia and condensing osteitis went on at the same time with fibrous medullitis and rarefying osteitis. Therapy can effect little in such cases; the deformities will go on increasing, and involving more and more the bones of the thorax, and death will very likely come about from intercurrent respiratory diseases.

Diagnosis of Pleuritic Effusions in Infancy.—D. J. M. Miller (*Arch. Ped.*, 1911, xxviii, 28) says that pleurisy with effusion is a common affection in infants under two years of age. In the vast majority of cases it is purulent. In arriving at a diagnosis, the antecedent affections should be fully appreciated. Of these,

pneumonia is by far the most common. While the general symptoms should be carefully weighed and considered, the physical signs are the more distinctive. The most reliable signs, in the order of their importance, are: 1. Exploratory puncture, 2. dullness with a sense of resistance, and 3. displacement of the apex. The other physical signs, so valuable in differentiating effusions in the adult, are uncertain, variable and confusing, and cannot be relied upon in infants. The recognition of localized collections of fluid is especially puzzling, and demands a frequent resort to exploratory puncture or operation in all doubtful cases. The variability of the physical signs is a striking feature in infants and should always suggest an effusion.

Latent Serofibrinous Pleurisy in Children.—Maillet and Gaujoux (*Gaz. des hôp.*, Dec. 24, 1910) says that latent serofibrinous inflammation of the pleura is rather frequent in children, but is often not noticed on account of the lack of prominence of the symptoms. The diagnosis is rather difficult because the slight symptoms do not cause a careful physical examination of the chest to be made. Pleurisy in children is much more likely to become purulent and thus be recognized. The symptoms of serofibrinous pleurisy are slight fever, without pain in the side, the cough being dry and hardly noticeable. If primary there are chilliness, malaise, loss of appetite and slight pain in the side. There is no difficulty in breathing and after a few days the child goes back to his play. Gradually he emaciates and gets weaker. The result is the discovery of the fluid, and its removal by aspiration, with recovery; or gradual absorption of the fluid. In some cases sudden death occurs. Inspection and palpation show deformity of the chest; the heart may be pushed over to the sternum by the fluid; there is absence of respiratory sound, and sometimes a bronchial souffle, or egophony. In some cases it is secondary to infectious diseases, like measles, scarlatina, or typhoid. It is much less likely to be due to tuberculosis than when it occurs in the adult.

Treatment of Splenic Anemia by Splenectomy.—G. A. Sutherland and F. F. Burghard (*Lancet*, Dec. 24, 1910) say that the characteristics of splenic anemia have been summarized as follows: 1. Anemia of the type usually spoken of as chlorotic, *i.e.*, a diminution in the number of red corpuscles, with a diminished corpuscular value in the hemoglobin. 2. Absence of any leukocytosis, usually leukopenia. 3. Considerable splenic enlargement, which cannot be correlated with any other known cause, such as leukemia, syphilis, tuberculosis, malaria, or hepatic cirrhosis. 4. The prolonged nature of the disease. 5. The tendency to gastrointestinal hemorrhage from time to time. 6. The termination of the disease, if sufficiently prolonged, in hepatic cirrhosis with ascites (Banti's disease). The last three of the above criteria may be described as accidental and non-essential. If we assume a loss of vasomotor control in the splenic artery leading to overfilling of the spleen with arterial

blood, it is possible to understand all the morbid changes in the spleen and in the blood. If this be accepted, and if it be recognised that this disturbance of function will usually have a fatal termination, the operation of splenectomy will be fully justified. The writers record two successful splenectomies for splenic anemia in girls twelve and six years of age with typical histories and signs of this disease and prompt and progressive improvement after the operation. As regards the ultimate result of the operation the writers can give particulars in only one case, the other having been recently operated on. The first patient when seen at the age of seventeen and one-half years, four years after the operation, was a healthy girl without any signs of splenic anemia.

Hemorrhage of the Newborn.—V. D. Lespinasse and G. C. Fisher (*Surg., Gyn., Obstet.*, 1911, xii, 40) review the scanty literature of treatment of melena neonatorum by direct transfusion of blood and record a case so treated by themselves. This was a male who showed no symptoms for one week after birth. Hemorrhage from the umbilical cord then began and persisted in spite of repeated ligation. When seen three days later the child weighed four pounds, was greatly emaciated and markedly icteric, with a few petechiæ and pemphigus bullæ on the legs and feet. The femoral vein was exposed without anesthesia and the radial artery of the father with quinine and urea anesthesia and an anastomosis was made. This was severed in seven minutes when the child's skin and mucous membranes had become quite red. The infant nursed well within half an hour after the operation. No hemorrhage occurred after the transfusion and the child was taken home the next day against advice. It continued to do well for six days, when there was a fresh attack of pemphigus and two days later bleeding from the left heel, then from the pemphigus, bullæ, nose and mouth and appearance of numerous petechiæ. No treatment was permitted and death occurred nine days after the transfusion. The father was an Austrian laborer, thirty-five years old, apparently well and strong; mother, Austrian, twenty-five years old. This was her second child, the first being a seven months babe which died soon after birth. The mother had notched Hutchinson teeth, an almost continuous headache and a most irascible temper. Of the six cases of hemorrhage of the new-born that have been transfused, an immediate cessation of the hemorrhages has been noted in all. A marked immediate increase in bodily vigor has been noted in all, as shown by the vigor and lustiness of the cry, the ability to nurse, and the avidity with which the nipple was sought. The anemia has been relieved at once as shown by the color of the visible mucous membranes and the hemaglobin index. As regards etiology, the case was undoubtedly syphilitic and died eight days after operation; there was no recurrence of hemorrhage, but death resulted probably from the effects of syphilis alone. The other cases were probably due to a hypoplasia of the blood

or sepsis, which was overcome by the bactericidal properties of the donor's plasma. Our case had palpably a double etiology, namely, syphilis, and an infected cord, as the babe was born under very unhygienic surroundings. The immediate effect of the operation was excellent as in the other cases, but evidently the infection present in the child was too virulent to be overcome by the bactericidal elements of the father's blood, and so the child ultimately succumbed. In transfusion for melena neonatorum, the father is the most acceptable as donor, because physiologically he is the closest to the baby of any individual except the mother. The child should be watched carefully to guard against acute dilatation of the heart from a too rapid flow. When the blood enters the baby's vessels too rapidly it will cause an acute dilatation of the right heart, manifested clinically by cyanosis, dyspnea, precordial pain, and cough.

New Observations on the Thymus and their Bearing on Children's Diseases.—Heinrich Klose (*Arch. f. Kinderheil.*, Bd. lv, H. 1 and 2, 1910) has clinically, experimentally, and biologically investigated the thymus gland. He gives a historical review of our knowledge of the function of this gland. Its mechanical influence on respiration is undoubted. Hematomata in the thymus have an important effect on the trachea. They may be due to syphilis or to birth injuries. There have been cases of death from thymus swelling in narcosis, in infections, etc. A hyperplastic thymus may compress the esophagus, hindering swallowing and nutrition. It may cause constant or sudden dyspnea; it may kill by pressure on the vascular system in the upper portion of the chest. Percussion and radiography assist in locating the prolongations of the thymus and determining its shape and size. A diagnosis of thymus stenosis may be made from physical signs alone, on the ground of symptoms confined to the deeper organs of the neck, such as sudden attacks of dyspnea with swelling of the jugular veins. The symptoms occur during the first year of life, often appearing immediately after birth. Radiotherapy has been attempted, but its use is dangerous since we can never know the extent of the involution that the rays will cause, even to the entire destruction of the gland. Intubation and tracheotomy have not given good results. The author has made a series of experimental operations on dogs. The thymus was removed and the operated and control animals were kept together and observed. Partial extirpation of the thymus had no effect at all on these animals. The best time for operation on dogs was found to be the tenth day after birth. Extirpation resulted in changes in the bones, nervous system, and nutrition. A cachexia thymipriva was caused, the animal becoming idiotic and dying in coma. The bones became smaller, porous, and fractured easily. When broken they healed with difficulty. There was shortening and atrophy of the bones. The lime salts were lessened in amount. The thymus seems to be an organ that has for one of its functions the hindering of production of acids in the organism, or the

neutralization of an excess of acid that has been produced. Being nuclein-rich it holds a place in the synthesis of nucleins. A nuclein acid poisoning, oxypathy, causes in young animals a form of rickets, weakness, increase in growth in bones, osteomalacia, and osteoporosis, with abnormal friability. The brain is increased in size and swollen; the ganglion cells are swollen, enlarged, and deeply stained with increase of protoplasm and changes in the nuclei. The perivascular spaces are increased. The symptoms of the animals deprived of thymus remind us of tetanus in children. The blood is not changed in the animals operated on. The only treatment that promises to be of value in these conditions is the surgical.

Prevention of Infant Mortality.—G. Koehler and C. St. C. Drake (*Jour. Amer. Med. Assn.*, 1911, lvi, 20) present infant mortality statistics of Chicago and make suggestions with a view to remedying direct and indirect causes of sickness and death in children. Causative conditions that need correction are neglected education, new environment, urbanization, female employment, improper care during pregnancy, and later neglected breast-feeding, overwork, bad health, alcoholism and poverty, some of which can be eliminated by legislation. The personal factor can be treated only by educational measures. Such measures promulgated in the public schools will have their effect in time. The present generation is much more difficult to reach. The procedures now followed in European countries is yielding results. The writer mentions Budin's consultations for nurslings and the English method, as practised by the Westminster Health Society of visiting mothers. Voluntary lady visitors who have received some training call on the mothers in their localities, often before the baby is born, and after births make calls as frequently as it seems necessary. Causative and contributory existing conditions that require correction are: incomplete birth registration, improper care, no reports of morbidity. It is impossible to apply a remedy if it is not known where the trouble exists. Births should be reported within twenty-four hours. Following this, advice should be given the mother in regard to the proper care and feeding of the child. Breast-feeding should be encouraged. Leaflets, mailed to the mother on receipt of the birth report, are useful; but the best results are obtained by personal supervision. Midwives properly instructed may be made valuable agencies in the prevention of infant mortality. Indirect causes to be remedied by action on the part of the authorities include bad sanitation, improper housing, congestion in cities, filthy environment, flies, bad water, and an unclean milk-supply.

Treatment of Knee Paralysis in Anterior Poliomyelitis, New Method of Muscle-tendonous Grafting.—Louis Menci  re (*Arch. Prov. de Chir.*, Dec., 1910) says that in infantile paralysis the paralyzed muscles should be examined both standing and sitting. The foot is rarely normal when standing; it is in equinovarus or equinovalgus; the leg is rotated outward. When walking the

patient throws the leg forward, swinging it like a pendulum. He may fix the knee with the hand, or rotate the whole leg outward. The knee will bend under him if there is no support. To obviate this trouble we must graft tendons onto the patella so as to imitate the normal action of the quadriceps extensor. The child should be examined sitting, first asking him to make motions with the well leg, and then the same with the paralyzed one, asking him to place the foot so as to reach certain marked positions shown by the hand. Placing the hand over the different muscles of the thigh the action or nonaction of the vastus externus and internus, sartorius, and tensor of the fascia lata may be felt. With the child on the back he should extend the leg and thigh. Having determined the paralyzed muscles, it is possible to decide what grafts will restore motion. The quadriceps extensor is generally paralyzed, while the sartorius and tensor are not. The flexors have preserved their power to some degree. It is necessary to make an artificial quadriceps which will make it possible to hold the leg stiff when supporting the body. The quadriceps as well as the sartorius is supplied by the crural nerve; the tensor of the fascia lata by the superior gluteal nerve. The sartorius and tensor are flexors of the thigh and the tensor is also an extensor of the leg. The adductor mangus is supplied by the obturator and the great sciatic nerves, and is an adductor, an external rotator of the thigh. The adductor is grafted into the aponeurosis of the inferior tensor, passing under the anterior portion of the quadriceps; the sartorius and tensor are passed through the same button-hole in the extensor and grafted onto patella, and cross again below the patella tendon. These muscles become extensors of the patella and hold the knee firmly in standing and walking.

Meningitis of Mumps.—C. Dopter (*Paris méd.*, Dec. 10, 1910) tells us that in the convalescence from mumps, or at the period of invasion, symptoms of meningitis may appear, headache, convulsions, and even coma occurring; paralyses of cerebral origin have been reported in this connection. Lumbar puncture shows that a lymphocytosis is present in the cerebrospinal fluid in eight out of ten cases of mumps in young children. Out of 1705 cases of mumps treated by the author, 158 showed meningeal symptoms. The phenomena appear six or eight days after defervescence with sudden fever, headache, stiffness of the neck, agitation, and vomiting. Kernig sign is present. In general the course of this complication is mild and is recovered from rapidly. In a few instances this is not the case and the patient dies in coma after some hours or days. There is always a large number of leukocytes found in the clot after centrifugation. Autopsy has shown congestion of the surface of the brain, and serofibrinous exudate adherent to the pia mater and surrounding the nerve trunks. Paralysis of the cranial nerve may be present; neuritic paralysis of the limbs is also seen. These symptoms are not permanent and are generally recovered from entirely.

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ORIGINAL COMMUNICATIONS.

**THE TEST OF LABOR IN GENERAL AND HOSPITAL
PRACTICE.***

BY

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THOSE of us who practise obstetrics are continually testing the efficiency of labor in given cases. By this is meant that we wait a reasonable time to see if the uterine contractions will not drive the fetus through the bony pelvis and the soft parts. If this be successfully accomplished in a certain time we speak of the labor as normal. If for any reason there be anomalies of the pelvis, the fetus or the uterine contractions whereby labor is unduly prolonged or extrusion of the fetus becomes impossible, we consider the labor abnormal and the case one which should be terminated by some kind of obstetric operation. We also know that in actual practice, the term, test of labor, varies a great deal, according to the one who is employing it. One man is contented to wait two days while a woman is endeavoring to deliver herself, so long as her condition be not serious. Another becomes impatient at the slightest delay and resorts at once to some form of operative interference. One kind of treatment may result as disastrously as the other. The great difficulty in our present day obstetrics is the lack of knowledge the practitioner has of the three important factors in any given case of labor, the size of the pelvis,

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the size and position of the fetus, and the efficiency of the uterine contractions. As a matter of fact we are expected to solve a problem, where it is extremely difficult and at times impossible to acquire certain data essential to a successful solution prior to the advent of labor. For instance, we are expected to successfully predict the course of labor in a given case when it is practically impossible to estimate how efficient will be the uterine contractions. Yet we know that unless all be in harmony there will result a hitch in the mechanism of labor and the case will be abnormal. Thus it has come about, because of the difficulties of the problem and because the majority of women come through all right any way, that the physician has become discouraged, fails to investigate his cases, and in most instances trusts to luck. In doing this he places himself in the position of an uneducated midwife, who considers that she is entitled to considerable credit when she ties the cord after the mother has done the work.

From a scientific standpoint, while some of the factors in the problem will always be illusive, others are open to a correct interpretation before the advent of labor. It is always possible to obtain a fairly accurate estimate of the size of the bony pelvis by pelvimetry, while palpation will usually enable one to determine the presentation and position of the fetus. Having acquired these data it is much easier for the physician to guess correctly, since the size of the child and the force and efficiency of the uterine contractions are not open to a great deal of variation from the normal.

Pelvimetry.—It is no more difficult to learn to measure a pelvis by means of a pelvimeter, than it is to learn to interpret abnormal heart sounds by the use of the stethoscope, yet every doctor's office is supplied with the latter, while the pelvimeter is rarely seen. This is in part to be explained by the cursory examination the pregnant patient undergoes at the hands of her physician, who is trusting to luck for the reasons stated above. In part, it may be explained upon the ground that the physician is apt to neglect a patient he has taken upon the contract system, as the majority of obstetric cases are taken. At any rate, whatever may be the reason, the pelvis is rarely measured before labor and the patient goes into labor with the physician in complete ignorance as to what lies before the woman or before him be the case easy or difficult. This is all wrong and we know it and should see to it that it is changed.

It should be borne in mind that when we find that the interspinous, intercrystal, bitrochanteric, and external conjugate pelvic diameters are 26, 29, 32, and 21 cm., respectively, it does not necessarily mean that the labor will be normal. On the contrary such measurements are simply of relative importance and signify that as far as external measurements are concerned the pelvis is normal. If the child be of normal size and the uterine contractions effective the labor will be of short duration and normal in every particular. On the contrary, given a very large child or inefficient contractions, even where the pelvic measurements be normal, varying degrees of dystocia may be present.

If the obstetrician finds the external conjugate below 18 or 19 cm., it is best in the majority of cases to employ internal pelvimetry in order to obtain an approximate idea of the length of the diagonal and true conjugates, for the true conjugate is apt to be shortened when the external measures less than 19 cm. Even smaller external measurements than these do not necessarily mean that there will not be a spontaneous delivery. It simply makes it probable that there is a slight flattening of the pelvis and that trouble may be experienced when the head comes to pass through this shortened diameter. Here may be seen the value of antepartum pelvic measurements. The physician approaches the case prepared for dystocia, knowing beforehand the degree of pelvic contraction present, and is in a much better position to intelligently apply the test of labor. He does not fret over a prolonged first stage, since he knows that this is a frequent accompaniment of contractions of the pelvis. Likewise, he is in a position to judge how long the woman should be in the second stage, before the labor ought to be terminated by forceps or other obstetric operation. If the contraction be moderate and, as far as he can judge, the child be not abnormally large, he is content to wait, if there be any prospect of the head's molding sufficiently to allow its passage through the contracted pelvis. Knowing the cause of the delay, and keeping close track of the condition of both mother and child, he has the situation well in hand. With one patient, under certain conditions he allows the test of labor to proceed to a length which would be very inadvisable in another patient where the conditions are different. In other words, because he knows the cause of the dystocia, he always holds the key to the solution of the problem.

Above all, the obstetrician who has an approximate idea of the size of a given pelvis is in a position to reduce the number of vaginal examinations to a minimum. In this way, sepsis is avoided, which is very important if it become necessary later in the labor to operate from below or above. The test of labor is no test at all, or rather is a dangerous test, if the patient be examined vaginally every fifteen or twenty minutes. In case of a prolonged labor with such frequent examinations the patient is almost always rendered septic. In a recent article Routh has shown that there is a great difference in the mortality of Cesarean section when performed upon clean and septic patients. Of 469 cases which could be classed as clean, that is, where the patients were operated upon before the advent of labor or where they were in labor, but with membranes intact, the mortality was only 2.9 per cent. On the contrary, in 230 cases, where the membranes had been ruptured, and there had been repeated examinations or attempts at delivery, the mortality of the Cesarean sections was 17.3 per cent. The same thing holds good in regard to other obstetric operations, but to a less degree because in forceps operations and in fact in all attempts at delivery from below, the peritoneum is not opened. Mortality and morbidity are high because of more or less meddling on the part of the physician. The latter, in his endeavor to make up for his lack of knowledge of the true state of affairs, by his fussing and frequent examinations, actually is often more of a detriment than an aid to his patient. Not a pleasant thing to contemplate but we know absolutely that this is the case.

There is another class of cases, where the difficulty lies not so much in the disproportion between the pelvis and the fetus, as in the inefficiency of the labor pains. The pains may be frequent enough, but they lack force both in the first and the second stages. Here, again, a knowledge of the pelvic diameters will be a great aid in making a differential diagnosis between dystocia due to pelvic contraction and uterine inertia. For we have no reliable clinical method for the measurement of the efficiency of the uterine contractions, except what they may be accomplishing. We all know by experience how much a uterus which apparently is not contracting vigorously will accomplish. On the other hand, we often see active contractions accomplishing very little. With weak contractions present one can apply the test of labor indefinitely in these

cases so long as the strength of the mother and fetus be not impaired.

The following is a case in point.

Spontaneous delivery after a labor of forty-eight hours.

CASE 297, Miss R. F., I-para, age twenty-two. Measurements: interspinous 24, intercrystal 28, external conjugate 20, diagonal conjugate 11.5. Labor began May 26, 1908. After twenty-four hours there was no engagement of the head. Patient was thoroughly tired out and was given gr. $1\frac{1}{4}$ morphine. At noon the following day examination under chloroform anesthesia; no pelvic contraction found. Diagonal conjugate 11.5. Patient delivered spontaneously after a labor lasting forty-eight hours. Child weighed 6 $\frac{3}{4}$ pounds.

Here was a case where the pelvic measurements were practically normal with the child weighing only 6 $\frac{3}{4}$ pounds; yet with no disproportion between head and pelvis, labor was not terminated for forty-eight hours. Undoubtedly this was due to inefficient labor pains. Toward the last under aseptic precautions the patient was examined under anesthesia in order to make sure there existed no reason for the dystocia, so far as the pelvis was concerned. In spite of the protracted labor, the puerperium was afebrile and the mother and child made good recoveries.

The following case illustrates a fifty-seven hour labor with the mother in good condition, but interference on account of the increase in the fetal heart rate.

CASE 170, Miss R. W., aged twenty-one, primipara, housework, O. L. A. Pelvic measurements: interspinous 24 cm., intercrystal 27 $\frac{1}{2}$ cm., external conjugate 19 $\frac{1}{2}$ cm. Pains began on January 7 at 8 P. M. Pains varied greatly in intensity and several times ceased altogether. At 4:30 A. M., January 10, 1906, patient having been in labor 57 hours, it was considered advisable to apply forceps because the fetal heart rate had increased from 150 to 172. Child lived.

This was a case with probably no contraction of the pelvis, where the delay was caused by inefficient pains. Forceps indicated after a test of labor of fifty-seven hours, not because of maternal indication but because of condition of fetus. Mother and child made good recovery.

The difficulties of estimating the size of the child is well shown by the following:

CASE 285, Mrs. C. W., aged twenty-two, II-para, housewife. First labor lasted three days. Instruments used. Position O. L. A. Pelvic diameters: interspinous 25 cm., intercrystal 27 cm., external conjugate 21 cm. Patient had been in labor

three days without making any progress. Cervix over half dilated; membranes intact; head freely movable above pelvic brim. Patient prepared for high forcep operation, 1-23-08. An attempt at internal podalic version was made, which was unsuccessful. Child was so large that hips could not be delivered. Abdominal Cesarean section performed. Ordinary incision of the uterus was not large enough for delivery of head. Incision was enlarged. Child delivered with difficulty. Mother and child made good recoveries. Latter weighed eleven pounds.

Although it was suspected we had to deal with a large child, the latter weighed far more than expected. Only this once have I attempted version in a patient with a normal pelvis where I was unable to drag the pelvis of the child through the superior strait. Here abdominal Cesarean section was the only operation to perform, in spite of previous attempts at delivery from below. Delivery through the natural passage could only have been accomplished after embryotomy, always a dangerous operation for the mother. Also, the child was alive and deserved a chance for its life.

Here is a case where in my absence, my assistant was rather too conservative, being fearful I might think he was looking for an opportunity to perform a Cesarean section.

CASE 499, Mrs. V. W., I-para, aged twenty-three. Pelvimetry: interspinous 25 cm., intercrystal 27 cm., external conjugate 21 cm. August 18, 1910. Patient in labor seventy-two hours. Pulse 128. Patient delirious. Four vaginal examinations. Examination under anesthesia: cervix size of silver dollar, head not engaged, easily pushed up, Mueller maneuver tried. Head would not enter pelvis.

Abdominal Cesarean section. Child weighed about 7 pounds. Mother and child made good recoveries. As far as could be determined here there was no pelvic contraction and the child was not large. Yet the pains were inefficient and the head remained immovable above the superior strait even after a labor of seventy-two hours. It is evident that one should not apply the test of labor so long that the patient's pulse begins to rise and delirium supervenes.

The following two cases illustrate spontaneous deliveries in slightly contracted pelvises.

A case of slightly contracted pelvis, with test of labor and normal spontaneous delivery.

CASE 516, schoolgirl, age nineteen years. Position of fetus O. R. A. Pelvimetry: interspinous 23.5 cm., intercrystal 26.5 cm., bitrochanteric 30 cm., external conjugate 18 cm.

An examination the day before labor began showed the head to be relatively large and high above the inlet. Patient went into labor at 7 A. M., February 3, 1911. At 4:30 P. M. there was

slight bulging and at 5 P. M., during a very severe pain, the head suddenly appeared causing a large second-degree laceration.

Patient discharged February 20, 1911. Perineum well united. Weight of child at birth 6 $\frac{1}{4}$ pounds.

A case of contracted pelvis with test of labor and a normal spontaneous delivery. Case 551, married, aged 20, occupation housewife. Position of fetus O. L. A. Pelvic measurements; interspinous 22.5 cm., intercrystal 26 cm., bitrochanteric 30 cm., external conjugate 17.5 cm.

The patient went into labor at 3 P. M., March 2, 1911. The head was not engaged, freely movable above the pelvic inlet. At 8 A. M., March 3, the cervix was completely dilated but the head was not descending rapidly. At 11:30 A. M. there was slight bulging. At 1 P. M. the child was delivered spontaneously. There was very marked molding of the head and a large caput on the posterior part of the right parietal bone. Mother and child are doing well. Weight of child at birth 6 $\frac{1}{4}$ pounds.

Such cases of spontaneous deliveries in slightly contracted pelvises could be multiplied if necessary. It is in this particular class of cases that the test of labor can be used most advantageously. Many of these patients if left long enough will deliver themselves. Others will need operative interference.

In conclusion allow me to say that it will make considerable difference in the practical application of the test of labor whether the patient be at home or in a well appointed maternity. If in the latter, one need not wait as long, for operative treatment by skilled hands, where vaginal examinations have been reduced to a minimum and made under the strictest aseptic precautions, is a far different procedure as regards mortality and morbidity, than when similar surgery is performed in private residences. In the border-line cases of pelvic contraction the patient should be given every chance for spontaneous delivery before operative interference is instituted. Forceps should then be gently applied. In case of failure and in the presence of possible sepsis, it is far better to perforate the child rather than to attempt abdominal Cesarean section. In this way the chances are in favor of saving one patient. The abdominal operation means the loss of both in a large percentage of cases.

MENSTRUAL DISORDERS OF OBSCURE ORIGIN.*

BY
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IN presenting a short clinical paper on this subject I do not expect to bring any new facts to your attention. The criticism is often made (and properly so) that in gynecology our mines of information have been "worked out," and that we either dwell continually upon old themes with which the profession is already familiar, or else weary the general practitioner with technical discussions in which he can take no possible interest. It would seem as if the last word had long ago been spoken about dysmenorrhea and menorrhagia and metrorrhagia, especially when considered from the ever-popular surgical standpoint, but every candid man must admit not only his ignorance with regard to the etiology of these familiar symptoms, but his disappointment at his frequent failure to relieve them by the approved methods of treatment which he has taught and practised for many years. It is a trite saying that we learn more from our failures than from our successes, but such is our natural tendency to dwell on the latter that we do not take the public into our confidence and give it the benefit of our less successful experience. You will all admit that it has really become difficult in this age of competition to be genuinely "conservative." I do not refer to the mere question of operative technic, which has now become fairly crystallized into a permanent form, but that old-fashioned conservatism (or shall I call it habit of observation?) which led even the boldest surgeon to hesitate before deciding to perform a serious operation after a single interview with the patient. Doubtless our methods of diagnosis have been vastly improved, and neither surgeon nor patient would care to return to the tedious and unscientific treatment of recognized surgical lesions with the hot douche, tampons, local applications, etc.

But we cannot deny that our brilliant results with the knife—not to speak of the impatience of modern women and the certainty that our neighbor will operate promptly if we are old-fashioned enough to suggest delay—have too often led us to resort to surgery

* Read at a meeting of the New York Obstetrical Society, January 10, 1911.

in improper cases, when the result has shown that we did *not* recognize the true cause of the symptoms that we sought to relieve.

It is hard to apply the ancient advice "*festina lente*," to restrain both the patient and physician long enough to satisfy one's self regarding the true nature of the case. It is so easy to operate, so popular—and so much more profitable. At the same time, if a specialist's opinion is worth anything it must be his *own*, whether right or wrong.

Looking back over twenty-five years of special practice and reviewing the many discussions in which I have participated before this and other gynecological societies, I feel that on the whole I have erred rather on the side of ultra-conservation, even though I have seen so many fads and fancies arise, flourish, and become consigned to oblivion.

To return to the subject, experience, the observation of the work of others, and above all many years in the lecture-room, instead of making me more confident in dealing with menstrual irregularities have only increased my feeling of helplessness in handling cases with which we are familiar.

Whatever may be one's dogmatic attitude before the patient, in general discussions and in the class-room, the constant return of women with symptoms unrelieved leads us sometimes to ask: "What if we are all wrong after all?" It is in no pessimistic spirit that I put this question, but with an honest desire to ask if your experience has been similar to mine, and to find help myself.

It would be superfluous to dwell upon the phenomena of normal menstruation before this audience. Yet, I am sure that we too often forget how closely this mysterious, though natural function, borders upon the pathological, and how largely the personal equation enters into it. The disturbances, local and general, attending its establishment in young girls, the variations in type, which may occur during the period of sexual activity, especially as the result of marriage and child-bearing, and the protean phenomena of the climacteric and post-climacteric periods—with all these we are sufficiently familiar. But, we do not always take them into account as we should in the consulting-room, when in these days the bald question is put to us: "Is an operation necessary or not?"

It is easy enough to tell a mother to have patience and that her daughter's symptoms will be relieved by nature, or to point out the fact that the girl's troubles are due to bad hygiene or poor general conditions, but the ever-present factor of recurring pain

and the prevailing surgical trend are a constant handicap to the physician who really wishes to do the best that he can for his little patient.

The same difficulty is encountered in dealing with normal nulliparæ who suffer from moderate dysmenorrhea, or irregularities of the menstrual flow, while you all know with what dread we await the visits of women at the climacteric who insist that their troubles are due perhaps to some slight laceration of the pelvic floor which they have had for twenty or thirty years.

I do not intend to consider these obvious conditions, but rather those in which certain definite symptoms are presented, associated with a local condition that *seems* to explain them, and in which the question at once arises: "Is this a medical or a surgical case, and if the latter, what hope of permanent relief can we hold out by operation?" I assume that we have learned by this time that the word "cure" is an elusive one, with one meaning for the gynecologist and another for the patient. I might add a third for the pelvic pathologist, who concerns himself with actual anatomical conditions, and not with the relief of symptoms.

We must revise our old notions of painful menstruation. The classical division into ovarian, obstructive, neuralgic, etc., may serve for text-books, or for the lecture-room, but the clinician knows from daily experience that no such artificial classification is possible. Given the case of an unmarried woman with a slightly anteflexed uterus and palpable ovary—not tender—neurotic, with the gastrointestinal symptoms so often accompanying, to what category shall be referred the pains which attend menstruation, before, during, or even a week after the flow? She has been long treated by her physician, has probably had a course of tamponade and hot douches, colon irrigation, etc., and has had a variety of opinions. Her appendix has been condemned, her ovary regarded as the offending organ, and of course divulsion and curetment have been recommended. Examination under anesthesia throws no light upon the etiology.

Finally, the cervix is dilated or incised, the curet is used with negative results. Apparently the so-called "obstruction" has been satisfactorily overcome. "Defective drainage," "atrophy," though recognized explanations do not help us, for so far as we can determine, the uterus is quite normal.

For two or three months she is relieved, then the pains recur as before. The abdomen is opened and a prolapsed (otherwise normal) ovary is sutured in position, perhaps a few

cysts are punctured and a normal or slightly diseased appendix is removed. The usual effect of the more serious operation is more prolonged, but eventually the patient's latter state is the same as at first, or is worse. This is a common picture. Where is the trouble? Was it a mistake in diagnosis; were the operations ill-advised? These are questions which are presented to us all and to my mind we seem to be little nearer a solution than we were twenty years ago, though fortunately we have learned better than to remove *both* ovaries, as was the custom with a former generation. Attention has been called to the uterine contractions which are probably present to a greater or less degree during normal menstruation, the exaggeration of which, as the result of local or distant stimuli, represents the ordinary cramp-like pains. Undoubtedly these may be due to actual ovarian and uterine disease, especially, the so-called "fibroid" uterus, displacements, etc., but they are also the expression of hyper-nerve stimulation in neurotic subjects in whom no palpable lesion can be detected.

The proper determination of the relative influence the local and general conditions is one of the most difficult problems with which we have to deal. Doubtless many of our disappointments following operations for the relief of dysmenorrhea are due to errors of judgment in this direction. I do not see how we can avoid them unless we keep our patients under observation long enough to become acquainted with their peculiarities.

The expression "ovarian dysmenorrhea" has become equally vague and unsatisfactory. I called attention twenty-five years ago to the impossibility of determining minor forms of ovarian disease at the examining and operating-tables, and the same criticism still holds good. Clinically and anatomically we are in many cases not yet able to affirm positively that painful menstruation is clearly due to ovarian trouble and that laparotomy is indicated. I have discussed elsewhere the effect of localized intrapelvic adhesions.

We have all met with typical cases of so-called "intermenstrual" pain, which has been confidently referred to cystic ovaries, yet how often we have noted this symptom associated with painful uterine contractions, without ovarian disease! In one of my most marked cases, in which an explorative incision was made, the ovaries were normal. The patient was afterward entirely relieved by local galvanism and has remained free from pain for five years, though she has never become pregnant.

The consideration of appendicular pains, recurring at the time of menstruation, would be interesting, but would lead us away from the main subject. It should be noted, however, that they often occur in just this class of cases of dysmenorrhea, and that they are frequently regarded as an indication for operation, especially by the general surgeon, who is not apt to explore the pelvis through the usual lateral incision, and thus may overlook actual disease of the ovaries and tubes. In my experience appendectomy, performed with the sole indication of occasional local tenderness and periodical pains, is purely empirical; even the "moral effect," if obtained, is transient. Here, too, long and careful observation of the patient is the only safeguard against error.

Ungratified sexual desire, or perverted habits in young women, doubtless account for some menstrual disturbances which we may refer to a slight local abnormality. It is unscientific to propose local treatment—either surgical or medical—before some attempt has been made to eliminate this factor. How injudicious then to advise an operation after a single interview before we are acquainted with the true cause of the symptoms! We simply invite failure.

It is time that we handled certain questions of sexual hygiene in married women "without gloves." We shall never get at the real cause of obscure pelvic troubles until we pay more attention to the disagreeable subjects of excessive and imperfect marital relations, prevention of conception and induced abortion. Whether we regard it as moralists or gynecologists the lax modern views of the community may well arouse our serious thought. It is a delicate and difficult matter to probe, but it must be done in the interests of science. I shall not dwell upon this subject, which I understand is to form the basis of a subsequent discussion before this Society, but I am sure that we need not look to surgery to relieve either dysmenorrhea, or irregularities of the flow, when these disturbing factors are constantly present.

Irregularities of the menstrual flow are perhaps the most annoying of the lesser evils that disturb the gynecologist's peace of mind. I exclude, of course, all the obvious causes of menor- and metrorrhagia—neoplasms, abortion, ectopic—and confine myself to cases in which the origin of the symptom is obscure or undiscoverable, by our ordinary, means of diagnosis. We wisely emphasize the importance of irregular uterine hemorrhages, with especial reference to the early diagnosis of malignant

disease, and teach our students that they must treat the *cause* and not the symptom, while we must admit that we are sometimes unable to determine that cause.

The terms "scanty" and "profuse" menstruation are, after all, purely relative, since we have no criteria by which to determine the amount of blood lost at each menstrual period compatible with good health. This is too well known to admit of discussion.

The most puzzling cases of menstrual irregularity are those occurring in unmarried women, since in this class of patients we are less likely to meet with slight pathological changes that might account for them. Of these, oligo- and amenorrhea may be quite inexplicable. I have called attention to the curious suppression of the menses (temporary or permanent) attending marked increase of adipose in young women, whether due to atrophy of the uterus or ovaries, or to disturbance of metabolism dependent upon the internal secretion of the glands; also to the rare form of amenorrhea following curetment. Here there is no history of pelvic inflammation or palpable disease. Amenorrhea as a forerunner of certain general diseases (especially those referred to affections of the blood and ductless glands) is mentioned in all the text-books. I need only allude to the gradual diminution and eventual cessation of menstruation following conservative operations on the ovaries, where the portions of the glands remaining undergo atrophy.

I do not know why young women, married and single, previously quite regular, should suddenly cease to menstruate for one, two, or even six months without having any other symptoms, and then resume the function spontaneously after every variety of treatment, both medical and surgical, has been tried in vain. We may explain it by temporary suspension of ovarian action, shock or fright, anemia, or poor general condition, but the fact remains that we are often entirely in the dark with regard to the cause of the phenomenon. We only know that these cases cause us no little annoyance and anxiety, and that it is one of the most difficult problems of the gynecologist to persuade patient and physician to suspend action treatment in the absence of any symptoms, or discoverable local trouble, sufficient to cause the former actual apprehension.

We are all constantly importuned by married women who have skipped one or two periods and are sure that they are pregnant. They—and too often their physicians also—are anxious that we should "do something." It is hardly necessary to add that the

diagnosis of early pregnancy in these cases (especially if the women are multiparæ) is often impossible. We are obliged to admit our ignorance and seek to temporize, giving some harmless remedy in the meantime. It is in vain that we suggest some other cause, or cite similar cases from our experience in which patients have missed several periods without satisfactory explanation and yet were not pregnant. Family physician and specialist are both pestered, and eventually the patient is apt to take the matter into her own hands and someone less scrupulous cures the uterus—with negative results. It is an interesting fact that a considerable proportion of the women who submit to the treatment of regular abortionists are not pregnant at all. I happen to know this, as I have been able to keep track of some of them afterward.

Menorrhagia in young girls, which recurs after repeated curetting, often without accompanying dysmenorrhea, is more obstinate than the same condition in married women. We have all had such cases under observation and have been discouraged by the failure of minor operations to relieve the symptom. When we can positively exclude neoplasms, ovarian disease, or hyperplastic endometritis, we are apt to refer it vaguely to "hemorrhagic endometritis," arteriosclerosis, uterine atony (due to defective innervation?). The opportunity is rarely presented to study the minute anatomy of the uterus, as hysterectomy is seldom indicated, but the tissue removed by the curet has not infrequently presented nearly the same structure as the normal endometrium.

In a strong, healthy young woman, with a small uterus and no evidence of pelvic disease, I have seen an almost continuous flow for two weeks at a time, the cause of which could not be determined. One hesitates to resort to cauterization of the endometrium in these cases (especially to atmocausis), ligation of the uterine arteries, excision of the endometrium. Oophorectomy or supravaginal amputation are to be regarded as last resorts, especially the two latter. We are less likely to encounter such inexplicable cases of regular, or atypical, uterine hemorrhage in older women, though the successful repair of existing lesions (laceration of the cervix and pelvic floor, displacements, etc.) often fails to affect in the slightest degree the profuse or irregular flow, which was the principal symptom from which the patient sought relief. It is always mortifying to the surgeon to obtain apparently a perfect result anatomically and to find that his prediction as to

cure has not been fulfilled. It is in vain that we review our treatment of the case—we can seem to find no flaw in it, yet this one symptom, hemorrhage, has not been relieved. I confess that I have been unable to explain the failures in some of these cases, especially those in which the uterus and ovaries seem to be perfectly normal. It is easy to theorize, but not to find the cause and the cure.

In married women who skip a period and then begin to have an irregular flow, we naturally think of incomplete abortion ectopic, but this phenomenon occurs, independent of these conditions, of shock, anemia, "taking cold," or any of the ordinary causes of suppression, and neither drugs nor the curet seem to have any influence on it. Exploration of the uterine cavity is our constant resort in case of doubt, but quite often without satisfactory results.

The change of type of menstruation as the result of childbirth or advancing years is well known and causes more uneasiness to the patient than to her physician.

The general recognition of the frequency and insidious approach of cancer of the uterus has caused the practitioner, as well as the specialist, to regard with suspicion every case of uterine bleeding, especially metrorrhagia, and to inquire more carefully as to its cause, instead of wasting time with medical treatment. This is doubtless a fortunate fact, in view of the importance of early diagnosis, but it must not be forgotten that every case of atypical bleeding after the menopause is *not* due to malignant disease, while on the other hand it is not always safe to trust too much to the report of the pathologist regarding suspicious tissue removed with the curet. It *is* possible to have irregular bleeding appear after the change of life, without determinable cause, even so-called "senile endometritis."

Apropos of neoplasms, I believe that we often refer profuse and exhaustive hemorrhages to the presence of small interstitial fibroids when they are really due to submucous polypi which could easily be removed with the curet or forceps. Not to discuss the pros and cons of conservative and radical operations for fibroids, it is enough to suggest that in young women an attempt to determine the real cause of the bleeding should properly precede supravaginal amputation. We shall always return to the ovaries whenever the question of obscure pelvic disease arises, as it is possible that they are primarily at the bottom of the trouble, probably because we shall never be in a position to

trace the connection between minor pathological changes in them and the menstrual disturbances under consideration, whether of circulatory or of nervous character. Even when no palpable disease can be detected, it is always possible that cystic, fibroid, or carcinomatous changes have already begun in the centre of the ovaries which influence menstruation.

To summarize:

In many cases of painful menstruation we are unable to discover any local cause for the symptom, either by the most careful examination, or at the operating-table. The fact that the dysmenorrhea is not due to minor palpable changes in the uterus or ovaries is proved by the fact that they are not permanently relieved by operation. The conclusion is forced upon us that such cases belong to the neurologist rather than to the gynecologist. Hence the propriety of careful observation of the patient, a guarded prognosis, and less frequent resort to operation before fair trial has been made of local and general treatment. Irregularities of the menstrual flow, whether oligo- or amenorrhea, menor- or metrorrhagia, may be unaccompanied by discoverable pathological conditions—either local or general—and resist the ordinary methods of treatment, both surgical and nonsurgical. While exploration of the uterine cavity is always legitimate under proper indications, too great reliance cannot be placed either upon the curet or the usual medicinal treatment. Radical operations would naturally be limited to intractable cases, especially in women near, or past, the climacteric.

8 WEST SEVENTY-SIXTH STREET.

TWENTY-FIVE CESAREAN SECTIONS WITH NO FETAL
OR MATERNAL MORTALITY.*

BY

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THE position of Cesarean Section has undergone rapid changes during the past few years. From a surgical curiosity it has come to be a routine procedure in obstetric practice, under indications which are becoming more and more standardized.

The primary purpose of pregnancy is reproduction, and the fundamental principle of obstetrics is to deliver a live healthy child from a healthy unimpaired mother. The ignorance and prejudice which has led to the separation of mother and child, at all hazards to the child, when dystocia was encountered, are fast disappearing under the light of modern surgical principles applied to midwifery.

Routine, careful examination of the antepartum woman by external and internal measurements has led to more rational appreciation of the probabilities of a natural birth and to more timely and suitable intervention in the interest both of mother and child.

Furthermore, "it is now understood concerning all labors that, in addition to the measurements of the diameters of the inlet and the outlet of the pelvis, the outcome of labor will depend on the size of the child, the malleability of its head, and the force of the uterine and abdominal contractions."

It should be the purpose of each one of us to become sufficiently skillful to recognize that a given head cannot pass through a given pelvis without serious injury to mother or child or both; and to present an uninfected, unfatigued woman to competent surgical intervention.

*Read before the Medical Society of the County of Kings, February 21, 1911.

It has been my experience to have twenty-five women presented to me in whom it seemed indicated in our judgment to do Cesarean section, and in this series there has been no maternal or fetal mortality.

I will briefly analyze these histories and offer a few conclusions on the indications and technic of the operation. All the cases were operated in general hospitals, which regularly admit obstetric cases only when in labor. They were from all classes of society. Seventeen occurred at the Jewish Hospital. Seven in the Methodist Episcopal Hospital. One in the Samaritan Hospital.

Nine were primiparæ, of whom all but one had a test of labor of from eight to twenty-four hours. One had had persistent efforts at high forceps by another physician in the hospital; but the child's head was not injured, and its heart was 130, and she was uninfected, to the best of our belief. One had no labor, was elected because of dystocia from ventral fixation complicated by two large vaginal cysts.

Nine were pregnant with second child, two of which were second Cesareans.

Two were in their third pregnancy, the indications in these two being dystocia from ventral fixation in one, and in the second a general contracted pelvis, with two dead babies previously, the first a high forceps, the second a version.

One was in her fifth pregnancy, the indications being a generally contracted pelvis with a test of nine and one-half hours of labor, one and one-half hours in the second stage; with a history of her first three babies' dying within three days after birth by high forceps, and the fourth one living but, as she said, "not right in its head."

One was in her sixth pregnancy, having had five normal births with small babies, now thought herself to be twelve months pregnant, and we considered her full ten months pregnant. She had forty-eight hours of labor, four hours in the second stage; with a slightly generally contracted pelvis, and a baby weighing ten pounds and fourteen ounces, with a very hard head.

Two were in their ninth pregnancy. The first had ventral fixation done five years before, and this was her first pregnancy since the operation. The second gave a history of six easy labors, small children, then increasing size of her babies, the seventh high forceps, the eighth a craniotomy, under my care, on a dead baby weighing eleven pounds and one ounce without the brains.

She was allowed fifty hours of labor with this child, with four hours of hard second-stage pains; the dystocia being due to a hummock exostosis on the posterior surface of the symphysis, about 1 cm. high and 3 cm. long at its base, in addition to a slightly rachitic pelvis.

One woman was in her thirteenth pregnancy and had dystocia from ventral suspension done one year before, which had resulted in a fixation with the results described below.

Labor.—One of the most striking facts of this series, to my mind, is the length of labor which is found considering the results.

Six only were elective Cesareans, with no labor, under the following indications: First, a funnel pelvis with a vagina almost closed with scar tissue following a difficult forceps. Second, dystocia from ventral fixation. Third, a generally contracted pelvis—7 1/2 cm. conjugate, and two dead babies. Fourth, a rachitic dwarf, colored, with kyphosis and lumbar lordosis, this being her second Cesarean; after removal of one tube for an ovarian cyst, and ligation and division of the other at the hands of a general surgeon. Fifth, stenosis of the vagina which had previously been operated on for hematometra and had again closed. In this case a supravaginal hysterectomy was done. Sixth dystocia from ventral fixation.

All the others had labor varying from two to fifty hours, and averaging about seventeen hours, five only being dilated or dilatable. It is to be said, however, that the labor was not intentional in nine of these cases; coming under observation after labor had lasted some time. I simply want to show that here was a series of the considered greater risk Cesarean with no mortality and a very slight morbidity.

However, I agree heartily with all the men who have shown that the longer the patient is in labor the greater is the risk of Cesarean.

INDICATIONS.

Dystocia from ventral fixation	5 cases
Scar tissue in the vagina, with funnel pelvis	1 case
Stenosis of vagina	1 case
Impacted, irreducible intraligamen- tous cyst	1 case

Prolapse of cord in generally contracted	
pelvis	3 cases
Bony tumor of pelvis	1 case
General contracted pelvis, relative	
after test of labor	9 cases
Funnel pelvis	1 case
Flat rachitic pelvis	3 cases

One-fifth of this series were ventral fixation cases. Three of the five were following operation at the hands of one man. He had operated by the method of suturing the fundus and posterior wall of the uterus firmly to the fascia, muscle, and peritoneum just above the pubes. The other two cases were accidental fixation in ventral suspension operations.

In all five cases the pathological findings were constant and of the classical description of such cases, the uterine development being in a very thin pouch in the posterior wall, with vaginal examination showing a dense tumor composed of the thickened, unlengthened anterior wall blocking the entrance to the pelvis, and the cervix at or above the promontory with the external os pointing above the promontory, making dilatation impossible and rupture of the thinned-out posterior wall imminent.

The stenosis of the vagina case presented a transverse septum with dense scar tissue all around it, and upon our examination no opening could be found large enough to admit a probe.

The intraligamentous cyst case presented a cystic tumor the size of a cocoanut in the culdesac, blocking the pelvis, and which could not be reduced under deep anesthesia.

The prolapse of the cord cases are not novel, but there have been but few such cases reported. The operation was done in the presence of considerable contraction of the pelvis in each case, undoubtedly a factor in the causation of the prolapse. They were done in the interest of the children, after the situation had been explained to the parents, the most interesting part of their history being that each was moved over five miles to the hospital in the presence of some labor pains, without pressure of the head shutting off the circulation.

The contracted pelvis case showed a true conjugate of 6 $\frac{1}{2}$ cm. in one case, 7 cm. in three cases, 7 $\frac{1}{4}$ cm. in one case, 7 $\frac{1}{2}$ to 8 cm. in nine cases. The 6 $\frac{1}{2}$ cm. case was elective, all the others had some labor. In all these cases the patient was ex-

amined under anesthesia, and the attempt made to engage the head by the method of Müller.

Operation.—Twenty-four were the classical operation. Sterilization was accomplished in two cases by removal of the tubes, and in one by the method of Harris; by excising the uterine end of the tubes, closing the wounds in the uterus, and planting the ends of the tubes on the posterior surface of the uterus by suturing peritoneum to peritoneum, the idea being that, if at some future time the patient should again determine to try to become pregnant, the abdomen could be opened and the ends of the tubes be again planted into the uterus.

A supracervical hysterectomy was done in the atresia of the vagina case because of the impossibility of obtaining proper drainage of the uterus.

The time of operation in the classical cases varied from thirteen minutes to twenty-seven minutes. The rapidity of the operation has much to do with its success in our opinion, speed being second only to accurate technic. Sterilization we do not consider unless requested by the patient or some manifest general condition of the patient contraindicates further pregnancy.

Puerperium.—Some febrile reaction, considering anything over 100.5 in the bowel febrile, was present in ten cases, and it is to be noted that there was more reaction in the cases which were long in labor, but at no time were there alarming symptoms in any of the cases. More than usual disturbance was characteristic of the two second Cesareans. A moderate acute gastric dilatation has been our most troublesome symptom which was controlled by lavage. One case ran a pulse of 130 for two days without temperature, and the heart suggested some dilatation. Primary union occurred in all cases but one, which developed a small sinus in the lower end of the wound leading down to a uterine suture, and resulting in a fixation of the uterus to the wound in the abdominal wall.

The average time in bed was seventeen days, and the average time home twenty-third day.

The babies varied from 6 pounds and 12 ounces to 10 pounds and 14 ounces. Sixteen were maternal fed alone. It is interesting to note that only three-fifths of the women in this series developed lactation sufficiently to nourish their babies.

The indications for Cesarean section have classically been divided into absolute and relative.

Absolute Indications.—All three factors of labor must be taken into consideration in every case. Dystocia from any one factor

seldom gives an absolute indication. Dystocia from failure of the muscular powers alone can only be considered as an absolute indication in certain elderly primiparae, and then only after those powers have been reasonably tested; with a knowledge of the character of intrapelvic tissue in such women. Dystocia from the child's head alone is never an absolute indication, as Cesarean on a hydrocephalus is never a justifiable procedure. Dystocia from the pelvis alone is, under the following conditions, an absolute indication: A generally contracted pelvis with a true conjugate of $7\frac{1}{2}$ cm. or less with a full-term child: a funnel pelvis in which the distance between the ischial tuberosities is 5 cm. or less with an anteroposterior diameter of 8 cm. or less; bony tumors of the pelvis; or distortion of the pelvis from disease, as rachitis or osteomalacia; or injuries, as fractures. Absolute indication is also found in irreducible tumors of the soft parts blocking the pelvis. Atresia of the vagina and cervix from scar tissue and some cases of ventral fixation.

Relative Indications.—There remain the greater number of cases of relative disproportion between head and pelvis. The cases, where if the pains are effective, and the head small and malleable, normal delivery may be accomplished; or harmless intrapelvic assistance rendered; or if the contractions are inefficient, or the head not malleable, one is called upon to decide between high forceps on a floating or slightly engaged head, version, pubiotomy, craniotomy, or Cesarean section. In making this decision as to which of these methods to adopt the following facts are to be considered. First, is the patient a primipara or a multipara? Second, is the head floating, simply resting on the inlet; or is the head engaged in its greatest diameter; or is the greatest diameter of the head below the brim of the pelvis.

In comparing high forceps to Cesarean, it is enough to state that in a relatively contracted pelvis with a true conjugate of from $7\frac{1}{2}$ cm. to 9 cm. with a head floating, the nonengagement being due to disproportion and not malposition, high forceps is an obsolete operation, the mortality of which to infant is tremendous, and the mortality to mother is considerable, and the morbidity very great. With a head firmly engaged almost to its greatest diameter in a pelvis of the above-mentioned class, generally contracted $7\frac{1}{2}$ to 9 cm. true conjugate, with a cervix dilated or dilatable; the application of the forceps with a few strong test tractions is justifiable under proper environment,

desisting before damage is done to mother or child. Failure to effect advance, the decision is one between Cesarean and pubiotomy. Here comes up the question whether it is a primipara or a multipara with which one has to deal. In primiparæ of this class, when advance does not occur, Cesarean should always be done. We do not feel it right to do pubiotomy, because of the very much greater danger from laceration and the considerable danger to the child of an intrapelvic extraction. In a multipara of this class when examination does not reveal too great a disproportion, the operation of choice is Cesarean section, but in multiparæ of this class pubiotomy claims a just indication if the patient has been given a very considerable test of labor, the results, so far as ease of delivery are concerned, being very striking; but the convalescence after pubiotomy compares very unfavorably with the convalescence after Cesarean.

The next class of cases, where the greatest diameter of the head is past the brim in either primipara or multipara and dystocia is encountered, do not offer a field for Cesarean at all, to my mind. This class belongs to the funnel pelvis and the general contracted pelvis of funnel type. A pelvis where the contraction increases as one nears the outlet. A form of pelvis until recently little appreciated, and now being more carefully investigated and found by some investigators, notably Williams, to be the most frequent form of contracted pelvis in white women. In these cases, the forceps failing, pubiotomy is the operation of necessity, unless, as noted above, the measurements of the pelvic outlet indicate too great contraction for pubiotomy to be performed successfully. In this class of cases, unless Cesarean has been determined upon prior to the passage of the head into the pelvis, it is too late to perform this operation and the child must be sacrificed, if it has not already succumbed. This and hydrocephalus are the only justifiable indications for craniotomy save on a child known to be dead. I cannot conceive any indication for doing Cesarean on a dead baby. Any woman who has a pelvis so contracted that a craniotomized head and an embryotomized body cannot be taken out through it would, in these enlightened days, have come to the attention of some competent obstetric surgeon before the death of the fetus.

Version comes in competition with Cesarean in contracted pelvis in only one class, the flat rachitic of moderate degree, 8 to 9 cm. true conjugate, when the child's head is not very large or hard, and this in multipara only, and then only with the

prophylactic passage of the saw for pubiotomy in case of arrest of after-coming head. This procedure has been done three times in my clinic, twice it was necessary to saw through the bone and once it was not. The passage of the saw *per se* caused no trouble whatever.

It is to be said that one seldom, if ever, regrets the election of Cesarean in any of the above-noted conditions.

The accidents of pregnancy, which have been advocated by some as indications for Cesarean, viz., certain cases of placenta previa, and eclampsia, and tonic uterus, I cannot believe are ever just cause for the operation by themselves alone. Time does not permit me discussion of this statement. It is needless to say that vaginal Cesarean never comes in competition with the abdominal operation, its indications being of an entirely different character.

Technic.—Our technic is as follows: The patient is prepared in bed by shaving and gentle washing with soap and water of the whole abdomen, which is then dried with ether and alcohol, and dry sterile dressings applied. An enema is always given.

The anesthetic is made as brief as possible, the patient being on the table before the ether and oxygen is administered. The abdomen is covered with a good coating of tincture of iodine. A hypodermic of ergotol is given as the anesthetic is started and another as the incision is being made.

A 12 cm. incision is made through the right rectus near the median line, two-thirds above and one-third below the umbilicus. The opening of the peritoneum is always done in the lowest part of the incision. Percussion always determines that no distended loop of the bowel is in front of the uterus. We prefer this incision to the very high one, entirely above the umbilicus, as it offers less danger of injury to the intestines and more ease in inserting the sutures of the uterus.

The uterus is isolated by means of a large laparotomy sponge inserted on each side of the edge of the wound, and by pressure of the lateral portion of the uterus through the abdominal wall against the wound by an assistant; which is faithfully kept up after the child is extracted. The uterus is opened by a small incision with a knife and enlarged with heavy straight scissors 10 cm. in a vertical direction on the fundus; after the birth of the child the hand hooked into the uterine opening delivers the uterus out of the abdomen and an assistant protects the upper part of the abdominal opening with laparotomy sponges while

the placenta and membranes are extracted, with the aid of a dry laparotomy sponge in the gloved hand.

The suture of the uterus consists of a single layer of No. 2 chromic catgut sutures, put in with long straight Keith needles down to the decidual layer, at intervals of $3/4$ cm. These are clamped and after all are inserted are tied. This is done as quickly as possible. If the uterus is atonic hot sterile salt solution is poured over it. A running Lembert suture of No. 2 chromic then covers the first sutures, the uterus is then replaced in the abdomen, and a stick sponge wipes out the ever-present small clot in the uterovesical fold, and the abdomen closed with catgut suture of peritoneum and crossed silkworm of fascia, fat, and skin. The whole abdomen is firmly encased in adhesive plaster after six hours. The patient is placed in the Fowler position to aid drainage and involution of the uterus. Nothing is allowed by mouth till the bowels have been moved at the end of twenty-four hours by an enema, the body fluids being kept up by rectal salines. Sutures are removed on the eleventh day. Patient out of bed on the fourteenth day.

105 GREENE AVENUE.

Series I. 25 Cases.

ABDOMINAL

HOSPITAL NUMBER	AGE PARA	HISTORY	LABOR	MEASUREMENTS	PELVIC EXAMINATION	INDICATIONS
M. E. H.* 27076 Case-1	37 IX	Ventral fixation 5 years ago. First pregnancy since.	12 hours with no engagement. Membranes intact.	Ample.	L. S. A. no engagement. Cervix high. External os at promontory. Ant. wall shelf.	Dystocia from ventral fixation.
J. H. 1809 Case-2	32 II	One easy labor 4 years ago.	12 hours. Membranes intact.	Ample.	A cystic tumor size of a fetal head blocked the pelvis.	Dystocia from irreducible (under anesthesia) intraligamentous cyst.
J. H. 3462 Case-3	22 I	At term. In first stage of labor.	14 hours of labor. Membranes intact.	Ext. Conj. 18 C.M. Diag. Conj. 9.5 C.M. True Conj. 8 C.M.	No engagement. Fully dilatable, hard head.	Generally contracted pelvis.
J. H. 3776 Case-4	24 I	Rickets. At term. In first stage of labor. 24 hours in labor.	24 hours no engagement. Membranes intact.	Ext. Conj. 16.5 C.M. Diag. Conj. 9 C.M. True Conj. 7 C.M.	2 fingers. No engagement.	Rachitic pelvis flat.
J. H. 4075 Case-5	30 II	First labor with dead baby, and great laceration.	No labor. Membranes intact.	Ext. Conj. 19.5 C.M. Diag. Conj. 10 C.M. True Conj. 8 C.M. Outlet much contracted.	Vagina greatly narrowed by scar tissue, no cervix. Vault a mass of scar tissue.	Funnel pelvis, scar tissue in vagina.
J. H. 4248 Case-6	38 III	First labor a breech. Second labor a transverse. Ventral fixation 3 years ago.	No labor. Membranes intact.	Ext. Conj. 18 C.M. Diag. Conj. 10.5 C.M. True Conj. 9 C.M.	Typical of this class of cases.	Dystocia from ventral fixation.
S. H. 2072 Case-7	28 I	At term. In first stage of labor.	18 hours with good pains. Membranes ruptured.	Ext. Conj. 16 C.M. Diag. Conj. 8.5 C.M. True Conj. 7.25 C.M.	2 fingers, no engagement.	Generally contracted pelvis.
J. H. 4455 Case-8	26 II	First labor easy. Ventral suspension 1 year ago.	12 hours with good pains. Membranes intact.	Ext. Conj. 20 C.M. Diag. Conj. 11 C.M. True Conj. 9.5 C.M.	No dilatation. High cervix, above promontory.	Dystocia. ventral fixation.
J. H. 4776 Case-9	34 XIII	Easy labors. Ventral suspension resulting in fixation 1 year ago.	12 hours with good pains.	Ext. Conj. 20.5 C.M. Diag. Conj. 11.5 C.M. True Conj. 9.5 C.M.	No dilatation, cervix above promontory. Thickened ant. uterus wall.	Dystocia from ventral fixation.
J. H. 5753 Case-10	26 III	First labor forceps, second labor version, 2 dead babies.	No labor.	Ext. Conj. 17 C.M. Diag. Conj. 9 C.M. True Conj. 7.5 C.M.	"Muller" under chl. showed manifest disproportion.	Generally contracted pelvis.

* M. E. H.—Methodist Episcopal Hospital. J. H.—Jewish Hospital. S. H.—Samartian Hospital.

CESAREANS

No Maternal or Fetal Mortality.

OPERATION	TIME	COMPLICATIONS	PUERPERIUM	WEIGHT OF CHILD	NURSING	TIME UP HOME
Classical with removal of tubes, after test of labor.	25 min.	Band between uterus and ant. abdominal wall. Whole development in post. wall.	Uneventful, primary union.	8 lbs.	Maternal.	14th day. 21st day.
Classical without removal of cyst owing to adhesions.	20 min.	Intraligamentous cyst from left side adherent in pelvis.	Febrile highest T. 102.2 on 5th day; P. 120 after operation, normal in 3 days. Primary union.	7 lbs. 8. ozs..	Bottle fed.	18th day. 30th day.
Classical after test of labor.	27 min..	None.....	Highest T. 103 Some tenderness. Primary union.	6 lbs. 12 ozs..	Bottle fed.	28th day. 40th day.
Classical after test of labor.	20 min..	None.....	Highest T. 100 Primary union.	6 lbs. 12 ozs..	Bottle fed.	14th day. 20th day.
Classical elective.	14 min..	None.....	Highest T. 99.8. Primary union.	7 lbs. 3 ozs...	Bottle fed.	13th day. 19th day.
Classical elective.	23 min..	The band with development in posterior wall.	Highest T. 101. Primary union.	6 lbs. 13 ozs...	Maternal.	14th day. 21st day.
Classical after test of labor.	20 min..	None.....	Highest T. 102.4. Febrile for 3 days. Primary union.	7 lbs. 14 ozs...	Maternal.	14th day. 21st day.
Classical after test of labor.	20 min..	The usual band binding ant. uterus wall to abdominal wall.	Highest T. 100. Primary union.	7 lbs.	Maternal.	14th day. 21st day.
Classical after test of labor.	25 min..	The usual band.	Highest T. 100.5. Poor drainage. Subinvolution Primary union.	7 lbs. 5 ozs...	Maternal.	18th day. 28th day.
Classical elective.	25 min..	None.....	Highest T. 100. Primary union.	9 lbs. 10 ozs..	Combined feeding.	14th day. 22d day.

Series I. 25 Cases.

ABDOMINAL

HOSPITAL NUMBER	AGE PARA	HISTORY	LABOR	MEASUREMENTS	PELVIC EXAMINATION	INDICATIONS
M. E. H. 34206 Case-11	26 II	Rachitic dwarf with marked lumbar lordosis. One Cesarean with removal of one tube and ligature of the other.	No labor. Membranes intact.	Ext. Conj. 16 C.M. Diag. Conj. 8 C.M. True Conj. 6.5 C.M.	Evident disproportion.	Flat. Rachitic pelvis.
M. E. H. 34701 Case-12	38 II	One miscarriage at 6 months 10 years ago. No other pregnancy. Moved 6 miles in ambulance.	Slight labor for 2 hours. Membranes ruptured.	Ext. Conj. 16.5 C.M. Diag. Conj. 9 C.M. True Conj. 7.5 C.M.	Prolapse of 10 C.M. of cord thro' a two finger cervix with no engagement.	Prolapse of cord, generally contracted pelvis.
J. H. 6044 Case-13	25 II	One very difficult labor, forceps 3 years ago, followed by stenosis of cervix and vagina requiring operation for hematometra.	No labor. Membranes intact.	Ext. Conj. 18 C.M. Diag. Conj. ? True Conj. ?	5.5 C.M. up ant. wall. 4.5 C.M. up post. wall. Complete transverse atresia showing + scar of former operation.	Stenosis of vagina.
J. H. 6776 Case-14	29 VI	5 normal labors with small babies (now thinks herself 12 mo. pregnant) over-time.	48 hours of labor. 4 hours in second stage. Membranes ruptured.	Ext. Conj. 16 C.M. Diag. Conj. 10 C.M. True Conj. 8 C.M.	Full dilatation with a very large hard head unengageable by "Muller" under anesthesia.	Slightly generally contracted pelvis, over-time child.
M. E. H. 35992 Case-15	25 I	After 12 hours of labor membranes ruptured with prolapse of cord; moved 5 miles in ambulance.	12 hours moderate pains.	Ext. Conj. 16 C.M. Diag. Conj. 9 C.M. True Conj. 7.5 C.M.	3 fingers dilated about 15 C.M. of cord prolapsed pulsating.	Prolapse of cord. A generally contracted pelvis.
J. H. 7171 Case-16	34 V	4 high forceps. 3 children died in first three days; one alive "not right in the head."	8 hours in first stage, 1½ hours in second stage. Membranes ruptured.	Ext. Conj. 16 C.M. Diag. Conj. 9.5 C.M. True Conj. 7.5 to 8 C.M.	Fully dilated head unengageable by "Muller" under anesthesia.	Generally contracted pelvis after test of labor.
J. H. 7382 Case-17	35 I	Operated 13 years before. Ventral fixation. Married one year.	No labor. Membranes intact.	Ext. Conj. 20 C.M. Diag. Conj. 12.5 C.M. True Conj. 11 C.M.	L. S. A. Typical pelvic condition of this class of cases.	Dystocia from ventral fixation.

CESAREANS. (Continued.)

No Maternal or Fetal Mortality.

OPERATION	TIME	COMPLICATIONS	PUERPERIUM	WEIGHT OF CHILD	NURSING	TIME UP HOME
Elective Classical with removal of remaining tube.	22 min..	Adhesion of stomach to wound of previous operation.	Highest T. 100. Slight gastric dilatation. Primary union.	7 lbs. 4 ozs...	Bottle fed.	20th day. 30th day.
Elective Classical.	15 min..	None.....	Highest T. 100 Primary union.	9 lbs.	Maternal.	21st day. 28th day.
Supra-cervical hysterectomy.	40 min	None.....	Highest T. 100.5. Primary union.	9 lbs. 10 ozs	Maternal.	25th day. 31st day.
Classical	19 min..	None.....	Highest T. 100.8. Highest P. 110. Uneventful. Primary union.	10 lbs. 14 ozs.	Maternal.	14th day. 19th day.
Classical	15 min..	None.....	Highest T. 104.6 on 5th day, due to breasts. Primary union.	7 lbs. 13 ozs..	Maternal and bottle.	18th day. 21st day.
Classical	13 min..	None.....	Highest T. 103.8. Primary union.	6 lbs. 13 ozs..	Maternal.	18th day. 20th day.
Classical Harris treatment of tubes.	20 min..	Rupture of vaginal cyst necessary to effect good drainage.	Highest T. 101.8, up and down for 7 days. Poor drainage. Primary uni. on	7 lbs. 6 ozs...	Maternal.	18th day. 24th day.

Series I. 25 Cases.

ABDOMINAL

HOSPITAL NUMBER	AGE PARA	HISTORY	LABOR	MEASUREMENTS	PELVIC EXAMINATION	INDICATIONS
J. H. 7489 Case-18	25 II	Craniotomy 1 year ago on after-coming head—in this hospital. Full term.	10 hours till complete dilatation then membranes ruptured and "Muller" under anesthesia.	Ext. Conj. 16 C.M. Diag. Conj. 9.5 C.M. True Conj. 7.5 to 8 C.M.	Full dilatation. No engagement under "Muller" and anesthesia.	Generally contracted pelvis
J. H. 8383 Case-19	25 II	Cesarean in this hospital 1 1/2 years before. No. 3776, Case 4.	3 hours. Membranes intact.	Ext. Conj. 16.5. Diag. Conj. 9 C.M. True Conj. 7 C.M.	2 fingers dilatation. Engagement impossible.	Rachitic pelvis flat.
M. E. H. 37149 Case-20	37 I	First stage of labor at term, 2 fingers dilated cord prolapsed 15 C.M. in vagina.	24 hours with poor pains. Membranes ruptured.	Ext. Conj. 16.5 C.M. Diag. Conj. 9.5 C.M. True Conj. 8 C.M.	3 finger dilatation. Long and fibrous. 15 C.M. of pulsating cord prolapsed.	Prolapse of cord in somewhat generally contracted pelvis in elderly primipara.
J. H. 9087 Case-21	24 II	First child born dead. Craniotomy	3 hours.	Ext. Conj. 17.5 C.M. Diag. Conj. 9.5 C.M. True Conj. 8 C.M.	2 finger dilatation. No engagement.	Funnel pelvis of generally contracted type.
M. E. H. 37831 Case-22	37 I	Persistent efforts at high forceps in the hospital by a clean doctor.	Over 24 hours. 6 hours in second stage. Membranes ruptured.	Ext. Conj. 17 C.M. Diag. Conj. 9.5 C.M. True Conj. 8 C.M.	Fully dilated.	Generally contracted pelvis after test of labor.
J. H. 9477 Case-23	35 IX	6 easy labors, small children then increasing size; 7th alive after high forceps, 8th craniotomy on dead baby of very large size.	50 hours with poor pains.	Ext. Conj. 18.5 C.M. Diag. Conj. 9.5 C.M. True Conj. 7 C.M.	Fully dilatation. An osteoma on the back of symphysis about 1 C.M. high, 3 C.M. long.	Bony tumor of pelvis.
M. E. H. 38106 Case-24	25 I	Overtime. In first stage of labor.	14 hours of labor. Membranes intact.	Ext. Conj. 19.5 C.M. Diag. Conj. 10 C.M. True Conj. 8 C.M. Bis. Ischial 6 C.M. Sagittal 9 C.M.	3 finger dilatation. Unengaged hard head.	Generally contracted pelvis of funnel type. Overtime child.
J. H. 9863 Case-25	25 I	After test of labor.	18 hours no engagement. Membranes intact.	Ext. Conj. 17.5 C.M. Diag. Conj. 9 C.M. True Conj. 7.5 C.M.	L. O. A. 3 finger dilatation.	Rachitic pelvis flat.

CESAREANS. (Continued.)

No Maternal or Fetal Mortality.

OPERATION	TIME	COMPLICATIONS	PUERPERIUM	WEIGHT OF CHILD	NURSING	TIME UP HOME
Classical	14 min..	None.....	Highest T. 99.6. Primary union.	7 lbs. 3 ozs. . .	Maternal.	12th day. 15th day.
Classical.....	15 min..	Slight omental adhesion to former scar in uterus which ap- peared as a white line 5 C.M. long.	Highest T. 103.8. Gastric dilata- tion. Primary union.	8 lbs. 12 ozs. . .	Maternal and bottle.	14th day. 22d day.
Classical	20 min..	None.....	Highest T. 101.5. Primary union.	8 lbs.	Maternal.	15th day. 21st day.
Classical	13 min..	None.....	Highest T. 101 A small sinus down to the suture of uterus healed in 2 weeks.	6 lbs. 13 ozs. . .	Maternal.	14th day. 21st day.
Classical	20 min..	None.....	Highest T. 100 for 5 days. Primary union.	7 lbs.	Bottle fed.	15th day. 22d day.
Classical.....	20 min..	None.....	Gastric dilata- tion relieved by usual treatment. Primary union.	10 lbs. 10 ozs.	Maternal.	14th day. 20th day.
Classical	13.5 min.	None.....	Highest T. 100.5. Pulse up to 140 for 48 hours.	8 lbs. 8 ozs. . .	Maternal.	Home in ambu- lance on 13th day.
Classical	16.5 min.	None.....	Highest T. 99.8. Primary union.	7 lbs.	Maternal.	13th day. 20th day.

A CASE OF PRIMARY OVARIAN PREGNANCY.*

BY

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(With Eight illustrations.)

SPIEGELBERG in 1878 recognized the possibility that a ruptured tubal or interstitial pregnancy may become adherent to an ovary and give rise to the impression that gestation has occurred in the ovary. The first valid case of primary ovarian pregnancy was demonstrated by Van Tussenbroeck, in 1899. Since then, according to Norris, eighteen or nineteen authentic cases have been reported in medical literature. From this category cases of tuboovarian pregnancy have been excluded.

The majority of the authentic cases have been discovered in the early weeks of gestation, usually in the sixth to the eighth week. Our anatomical knowledge of ovarian gestation is derived from a study of the earliest forms of ovarian pregnancy. The anatomical diagnosis of early cases is comparatively easy. For more advanced cases Spiegelberg formulated the following criteria:

1. The tube on the affected side must be intact.
2. The fetal sac must occupy the position of the ovary.
3. The ovary must be connected to the uterus by the utero-ovarian ligament.

4. Ovarian tissue must be found in the sac wall.

To these criteria Williams and others have added:

5. Ovarian tissue must be found at various points of the sac wall at some distance from each other.

And Norris furthermore adds:

6. The tube on the affected side must show no microscopic evidence of pregnancy.

The last two criteria are necessary in order to exclude cases of tubal pregnancy which have ruptured into the broad ligament, and in which the ovary has become intimately adherent to the gestation sac.

On the other hand, in those early cases where the fetus has

* From the Pathological Laboratory Beth Israel Hospital. Specimen shown at the New York Academy of Medicine, Section on Obstetrics and Gynecology. Nov. 25, 1910.

been converted into a hematomole and no ovisac or fetus is present, we are obliged to first establish the presence of pregnancy.

The following illustrates a case that may be included in this category: The patient was admitted to the service of Dr. Bandler, at Beth Israel Hospital July 25, 1910.*

Patient is twenty-four years old; married three years; has one child, two years of age. No abortion or miscarriage. Her family and past history are of no interest. Menstruation began at the age of fifteen, occurred at intervals of three to three and a half weeks, was moderate in amount; the flow lasted as a rule eight days and was accompanied by slight pain. Last menses seven weeks before admission to hospital.

Present Illness.—Two months before admission to the hospital she had sharp pain in the lower abdominal region, especially on the right side, radiating to the back and down the thighs. At this time she first noticed a profuse yellowish vaginal discharge which was associated with frequent and burning urination. The discharge has since subsided. The attacks of pain occurred intermittently once or twice daily, and lasted from a few minutes to an hour. She has felt chilly and feverish. For two days previous to admission there was slight vaginal bleeding. Bowels are constipated. Urination at present is normal. Appetite is poor. Patient complains of weakness.

The predominant symptoms therefore are:

1. Sharp radiating pain, especially on right side.
2. Chilly and feverish sensations.
3. Weakness.

Physical Examination.—The patient was of medium height and weight fairly well nourished, and unusually dull and apathetic. The abdomen was generally tympanitic; no palpable masses or rigidity were present. There was tenderness over the lower half of the abdomen, more markedly on the left side.

Vaginal Examination.—Uterus somewhat enlarged and in the normal position. The right adnexa was tender, the left adnexa exquisitely so. On the left side, close to the uterus, a mass, about twice the size of an average normal ovary, could be felt, which was exceedingly tender to the touch. This mass appeared fixed and was regarded as an enlarged ovary, although the characteristic hardness of an ovary was not present. The tube was not

*I am indebted to Dr. S. W. Bandler for the privilege of assuming charge of the case.

palpable. On the right side an enlarged and very tender ovary was easily palpable. The right tube was also not palpable.

Urinary examination was negative.

Temperature ranged between 98.6° and 99.6° .

Pulse was between 70 and 80 of good quality.

Vaginal and urethral smears were negative for gonococci.

Operation.—A diagnosis of either ectopic gestation or inflammatory process, or perhaps both, having been made, an exploratory laparotomy was done on July 28, 1910.



FIG. 1.—Photograph taken after sections were cut from ovary. Section taken from *a*. is shown in Fig. 2; through *b* in Figure 3 and 4. *c*, Area of rupture. Section taken from *d* is shown in Fig. 5.

On opening the abdomen about 2 ounces of yellowish fluid was found in the pouch of Douglas. The pelvic peritoneum was edematous, and the uterine serosa tore through on the slightest manipulation. The uterus was of normal size and shape. The left tube was bent in a backward direction and was attached to an enlarged ovarian mass. This mass was in turn fixed by soft adhesions to the posterior aspect of the broad ligament close to the uterus. The left ovary was edematous and presented at its lower portion a dark chocolate-brown irregular protruding mass the size of a twenty-five cent piece. This mass was in part

adherent to the broad ligament. The dark mass on the ovary was regarded as a degenerated corpus luteum verum. In trying to deliver the left adnexa a small plum colored mass, of about the size of a hazelnut, was brought to view. This had apparently been free in the pelvis and suggested a ruptured ectopic pregnancy. The tubes were *neither macroscopically enlarged nor ruptured*. Every indication pointed to the fact that we were dealing with an ovarian pregnancy. The left tube and ovary were therefore removed. The right ovary was cystic, edematous and friable. The diseased portion was excised. The abdomen was closed without drainage.

Pathological Examination.—The specimen consists of the tube, the mesosalpinx, and ovary. The tube is short (3.5 cm.), presents no nodular swellings or the slightest evidence of rupture. The fimbria are free. The ovary measures $6.5 \times 4.5 \times 2.5$ cm., but has shrunk considerably since the operation owing to its immersion in the preservative (formalin). It is prismatic in form, the smaller end being attached. Fine and coarse bands of adhesions stretch from the surface of the ovary to the tube across the mesosalpinx. At the large end is an area about $2\frac{1}{2}$ cm. in diameter which stands out in marked contrast to the white glistening surface of the rest of the ovary. It is irregular, chocolate colored, and bulges out apparently from the interior of the ovary; it also has all the physical properties of a firm clot. On section of the ovary this irregular surface forms part of the circumference of a mass of similar color and consistency and measuring from 2.5 to 3.5 cm. (Fig. 2). This mass is surrounded, except at the area above described, by a sharply defined capsule, consisting of ovarian substance, more or less crescentic in shape and varying in thickness from a few millimeters to a centimeter. The ovarian capsule is white in color and presents numerous small cysts.

Sections were taken through the apparent points of rupture and at various distances from each other as far as the hilus; some transverse sections were made of the tube on the same side and of the excised portion of the right ovary. The sections were stained by hematoxylin-eosin, the Mallory stain for connective tissue, and the Van Gieson stain.

*Microscopical Examination.** The section shows (Fig. 2) the

* Dr. Eli Moschowitz, Pathologist to the hospital, very kindly controlled the microscopic findings. It is a pleasure to state that he made the diagnosis quite independently of the clinical data.

greater portion of the ovarian tissue replaced by a central mass of blood and fibrin. This is surrounded by a capsule of typical ovarian stroma. Immediately overlying the coagulum the ovarian stroma is of coarser texture while the cellular elements become more abundant toward the periphery. There are a



FIG. 2. Section taken through (a) Fig. 1.

moderate number of primordial follicles, atretic follicles, and one corpus albicans. Here and there is a moderate leukocytic infiltration, while pigmentation is scattered throughout the entire ovarian cortex, and is especially evident at the margin of the coagulum. Here too are a number of isolated, as well as

groups of large pigmented cells with perfectly round and centrally situated nuclei that resemble strongly lutein cells.

The central mass consists of masses of red blood cells and fibrin. Some of the sections, particularly those through the rough protruding area, show few more or less degenerated villi embedded

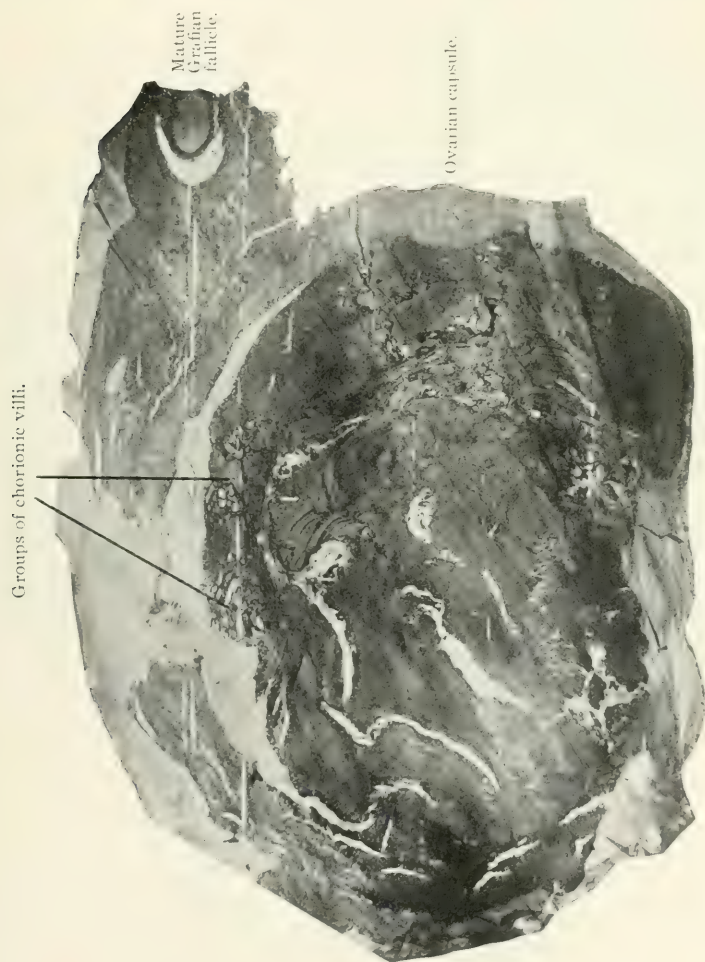


FIG. 3.—Section taken through (b) Fig. 2.

in the coagulum. There is not the typical double layer of Langhans. The myxomatous stroma characteristic of such early chorion is, however, well retained. In the sections taken through the central portion of the ovary, the chorionic villi are more abundant and better preserved. Several groups of these

may be seen at the margin of the coagulum underlying the typical ovarian stroma (Fig. 3 and 4), while other groups are variously situated within the coagulum.



FIG. 4.—Section taken through the ovary near the hilus. (*d*) Fig. 1.

At one area of the surface of the ovary there are several collections of large polygonal and fusiform pale cells with rather small round and oval nuclei (Figs. 2, 6 and 7). These present the ap-

appearance of decidua, resembling the type seen in the premenstrual uterine mucosa and, in some parts, true decidua. Lining the space that separates the two groups is a single layer of endothelial cells (peritoneum).



FIG. 5.

The tube on the left side showed no evidence of pregnancy nor any decidual reaction. The excised portion of the right ovary showed several cystic follicles, edema of the stroma with a

moderate infiltration of leukocytes, and theca-lutein proliferation of one of the follicles. No decidual reaction whatever was noted.

Postoperative Course.—We waited two weeks after the operation to note if the patient would spontaneously pass a decidual cast. This did not occur. In view of the irregular menstrual history and the possibility of a uterine abortion, she was curetted. Very little tissue was obtained. Microscopic examination of the scrapings showed a somewhat infiltrated stroma in which a few



FIG. 6. —Central group of chorionic villi. From Fig. 3.

glands were embedded. There were no evidences either of pregnancy or even of a decidual reaction in these curettings.

This case, therefore, satisfies all the criteria of a primary ovarian pregnancy which we mentioned. In the strictest sense this case can be regarded as an ovarian abortion. Unfortunately the mole, which I found lying free in the pouch of Douglas, went astray, and could not therefore be examined.

The Incidence of Ovarian Pregnancy.—Since Norris' report of nineteen cases, in August, 1909 (*Surgery, Gynecology and Obstetrics*) the only case that has been added to the literature up

to the present date is that by A. W. W. Lea. Supposed cases of ovarian pregnancy have been reported by other observers, but owing to inconclusive microscopical proof, these cannot be admitted. My case would, therefore, make the twenty-first on record. This estimate, however, is a conservative one. With more precise laboratory examinations the cases will probably increase in frequency. As compared to tubal pregnancy, the incidence of ovarian gestation will nevertheless continue to be small. The interest that ovarian pregnancy bears is more a histological than a clinical one. The mere fact that it occurs is proof against the contention "that pregnancy can take place only on portions

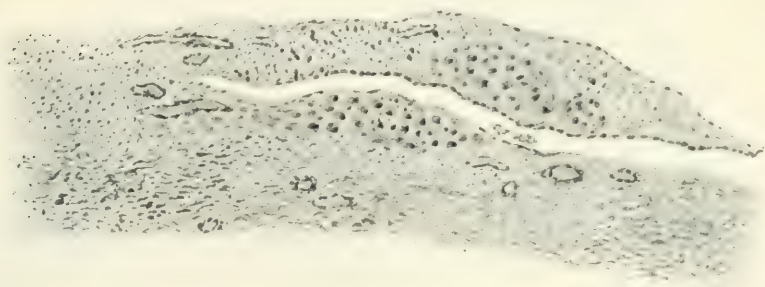


FIG. 7.—Showing decidua tubercles separated by a narrow cuff lined with low flat cells. From (a) Fig. 2.

of the Müllerian duct derivatives." The cells lining the Graafian follicle are apparently capable of serving as a fertile soil for the embedding of the impregnated ovum.

The Etiology of Ovarian Pregnancy.—Nothing is definitely known as to why ovarian pregnancy occurs. Impregnation must be assumed to have taken place within the follicle. The conditions that favor or bring about this anomalous conception are still obscure. The causes can in all probability be ascribed chiefly to maternal peculiarities. Among the maternal causes we may assume that *the ovum has not been discharged into the peritoneal cavity though rupture of the follicle has taken place.* This may be due to:

- a. The rupture is insufficient for the escape of a large ovum;
- b. The ovum may remain embedded in its discus proligerous;
- c. The follicle may have been cystic; and
- d. According to Leopold, a centrally situated follicle discharges into a more superficial one which then becomes the pregnant follicle.

Under these conditions the spermatozoon can find its way into the follicle and impregnate the ovum *in situ*. My case would perhaps suggest another favorable factor for this sort of pregnancy, namely, a short tube.

The notion that the furrows at the surface of the ovary, as found in the gyrate ovary serve to lodge a discharged ovum, has never been proven and seems altogether fanciful. On the

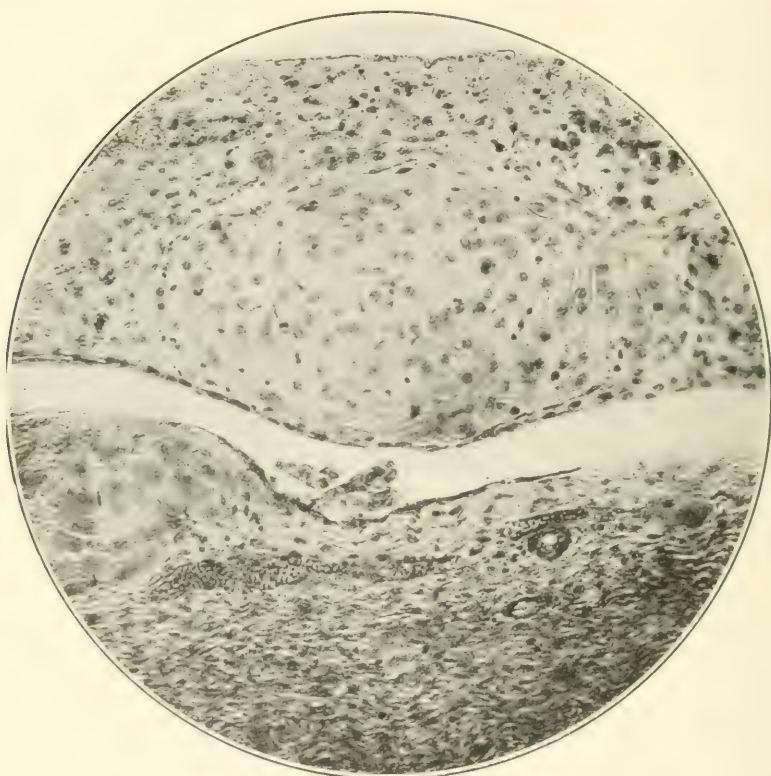


FIG. 8.—Photomicrograph showing portion of decidual tubercles.
(Same as Fig. 5.)

other hand, in the majority of authentic cases so far reported, it has been proven that pregnancy was *intrafollicular*.

Pathology.—The follicle containing the impregnated ovum becomes converted into a corpus luteum verum. In the majority of cases a typical corpus luteum, however, is not formed because the hemorrhage that occurs destroys most of the cells and their relations. The development of the pregnant ovum proceeds in

the ovary as in the uterus, burrowing and expanding in all directions.

For the accommodation of the growing fetus the ovary is better adapted than the tube, for the following reasons: 1. Ovarian tissue can hypertrophy to a far greater degree; 2. the vascular supply is richer; 3. the comparative roominess of the follicle, which is lined by an inner soft layer of cells capable of supporting the ovum.

The duration of the pregnancy will depend upon the situation of the follicle within the ovary, and also upon the actual site of impregnation within the follicle. A centrally situated follicle with a deeply seated ovum would favor a longer duration of pregnancy than one more superficially located. The ovary expands around the ovisac as it accommodates itself to other cystic tumors, the dermoid for example.

Rupture is occasioned in the same way as in tubal pregnancy.

1. The invasion of the syncytium into blood-vessels may cause the intracapsular or extracapsular bleeding.

2. The sac may become thinner and no longer able to resist the increasing pressure of the growing ovum. The intraperitoneal bleeding may be very slight or, as in ruptured tubal pregnancy, severe. In the former instance, the process may go on to resolution or undergo inflammatory change.

The majority of the cases reported have been those of ruptured ovarian pregnancy, due probably to the fact that the follicle was situated superficially. Ten of these reported cases had gone on to later periods of development, but it is not at all likely that ovarian pregnancy has ever actually gone on to full term. A number of lithopedions that have been reported may have had their origin in the ovary.

As to the Decidual Reaction.—Franz and Webster first drew attention to the so-called "decidual tubercles" occurring on the surface of the ovary in ovarian pregnancy. These tubercles are nicely demonstrated in our specimen. For the detection of these tubercles repeated examinations are sometimes necessary. In our case, for instance, we found them in only one block cut from the specimen.

It is well known that in uterine pregnancy the subperitoneal connective-tissue cells of both tubes and ovaries show a decidual reaction. The same phenomenon is observed in ectopic gestation. The nature of the decidual cells found on the ovary can only be regarded as due to an indirect conversion of ovarian stroma

cells (Schwangerschaftsreiz) into larger decidua resembling cells, and not as in the tube, to migration of chorionic cells to the surface. A true decidua, however, as met with in the pregnant uterus has never been demonstrated.

Symptomatology.—1. *Uterine bleeding* is not constant. The bleeding arises entirely from the swollen and hyperemic uterine mucosa. In tubal pregnancy the blood may pour down through the uterine ostium, while in ovarian pregnancy this is of course not possible.

2. *Menstrual History.*—In the majority of patients a history of amenorrhea for a period of from five weeks to two to three months is usually obtained. In some instances the menstruations are regular, and in one case (Lea) the menstrual period prior to the operation was three weeks. In others there is a history of irregular bleeding for some months prior to the operation. In tubal pregnancy on the other hand a history of amenorrhea is more common. The explanation of the irregularity of this symptom in ovarian pregnancy may be found in the fact that uterine decidua is perhaps less often formed under the influence of ovarian gestation than in tubal pregnancy. The irregular bleeding may indicate that the rupture had taken place long before the patients come to operation. The age of the pregnancy in those early cases where no fetus is found cannot be determined with accuracy. The chorionic villi are generally in a process of degeneration. Syncytial buds and nucleated blood cells when present are of help in estimating the duration of the gestation.

Pain is the rule, but may be absent altogether.

Age of Patient.—Varies from twenty to forty-one years, and apparently has no special significance.

The diagnosis presents the same difficulties as tubal pregnancy, and to my mind the differentiation is practically impossible. It is true that some authors report cases in which a correct ante-operative diagnosis was made, but such a diagnosis is rather of the nature of a correct guess than a revelation of fine clinical acumen. At best we can only suspect the condition.

More important than the clinical diagnosis is the anatomical diagnosis. The two chief conditions which may be differentially considered in the diagnosis are:

1. Hematoma of the ovary.
2. Ruptured tubal pregnancy. The rare cases of bleeding

from an erosion of a Graafian follicle or corpus luteum will also have to be considered.

Treatment.—Our available material so far has scarcely been sufficient to make definite rules. It may not be premature, however, to say that these cases will come to operation whether the diagnosis is made or not.

50 EAST NINETY-SIXTH STREET.

THE CHAMBERLENS AND THE OBSTETRICAL FORCEPS.

BY

CLARENCE B. INGRAHAM, M. D.,*

Denver, Colorado.

(With three illustrations.)

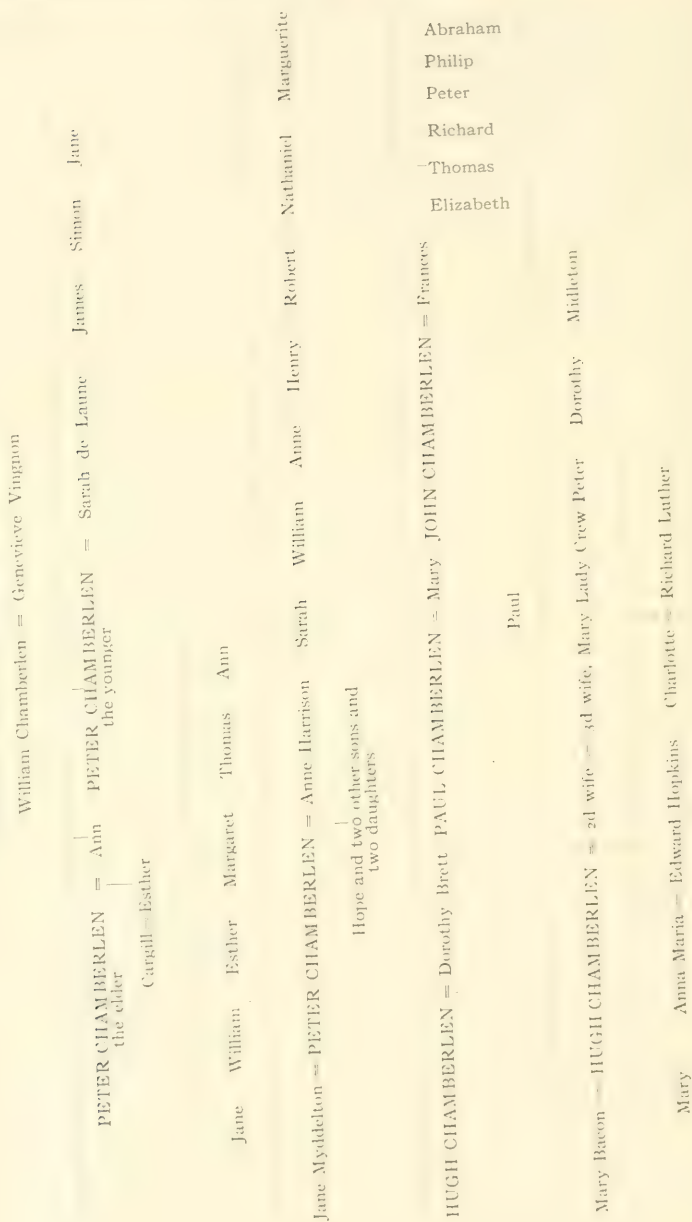
THERE is no doubt that the Arabian surgeons used forceps to deliver the fetal head in difficult labors, as Avicenna mentions them; also Albucasis, who died in 1112, gives drawings of crude forceps used in his time. Their inner surfaces were, however, provided with teeth which were intended to penetrate the head and it is evident they were used only as cranioclasts on the dead child.

The probability is that forceps for the delivery of the living child did not exist in remote times, but to whatever extent of perfection they may have reached, all knowledge of them had been lost for centuries and their reinvention would in reality be a discovery.

Rueff in 1554 published a book on midwifery which was translated into English under the title of "The Expert Midwife." By some he has been conceded the discovery of the midwifery forceps. He was, however, an obstetrician of no exceptional ability. His book is far inferior to that of Rhodion which preceded it. It is full of much useless and harmful matter, and Rueff's name would be now scarcely known were it not for his description of the method of extracting dead children and the instruments advised for the method, namely, the duck-bill forceps, tooth forceps, and the long smooth forceps. It is to the mention of the last named that he owes his notoriety. There is a representation in his book of this instrument, and as Mulder observes it is like a lithotomy forceps, and he states, "it could have been no more his intention to grasp the fetal head with this instrument than with tooth forceps,

* Read before the Denver Historical Club, Jan. 20, 1911.

PEDIGREE OF THE CHAMBERLENS.



both of which could only be used to grasp portions of the broken up fetal skull."

Curiously enough, Heister recommends stone forceps for extracting a dead fetus and writes that the large forceps for extracting stones are much better than the hook or any other instrument.

According to Aveling and to all investigators it is irresistably proven that the invention of the midwifery forceps belongs to the Chamberlin family, to which generation of this interesting family of famous obstetricians is the only question left to solve. The discovery was a family secret, handed down from father to son and their mysterious manner of delivering difficult cases brought success and fame to each early in life.

The Chamberlins have been much censured by writers for withholding a secret, which would and has meant so much to the saving of human life, but as Aveling states, "It is not fair to judge members of our profession, who lived over two hundred years ago, by the code of ethics which medical men now accept, and at the age in which the forceps was invented the profession delighted in mystery."

Still, in 1723, Palfyn, a physician of Ghent, exhibited before the Paris Academy of Medicine, a forceps which he designated as *mains de fer*. It was crude in shape and did not articulate, and in the discussion following its presentation De la Motte stated that it would be impossible to apply it to the living woman, but added that if by chance anyone should happen to invent an instrument which could be so used and keep it secret for his own profit, he deserved to be exposed upon a barren rock and have his vitals plucked out by vultures; he little knew that at the time he spoke such an instrument had been in the hands of the Chamberlen family for nearly a hundred years.

The founder of the family was William Chamberlen, a French Huguenot, who in 1569 was living in Paris with his wife, Genevieve. They were suffering all the hardships and cruelties to which those of that faith were exposed, so when at this date fresh persecutions were ordered they determined to seek shelter in England. From the admirably kept register of the Church of St. Julia, where it was the custom upon the arrival of refugees to enter their first reception of the Lord's supper in the book it is learned that Southampton was the destination chosen. The following entry occurs in French. "Ensuyt les noms de ceux qui ont faict professio de leur foy et admis a la Cène."

The family consisted of father, mother, and three children, Peter, Simon and Jane, while the register shows that another son, James, was born the year of their arrival, and three years later another son, Peter. It is this fact, that there were two brothers named Peter living at the same time, and a son of the younger one of these called Peter, and later two Hugh Chamberlens that has so confused biographers.

There is no positive proof that William, the father, was a doctor; but the following are four reasons given by Aveling for believing he was: First, in France at this time Protestant physicians were not allowed to exercise their profession under the claim that they did not advise their patients when the moment was come for taking the Sacraments. Second, it appears also that at Southampton medical men of the French Church were comparatively numerous. Third, two of William's sons were surgeons, and fourth, Dr. Peter, son of Peter the younger, speaks of having been "nursed up from the cradle to all the parts of Physick, and that in the Asclapiad families."

In a deposition concerning the birth of the younger Peter, 1596, the words "late William Chamberlaine," appear but when and where the father died no record has been found.

As has been said, Peter Chamberlen, the elder, was born in Paris and came to England with his father and mother and was at Southampton in 1572, at which time he was old enough to attest to the birth and baptism of his brother, Peter the younger.

In 1598, February 13, there is the following entry in the "Annals of the Barber Surgeon's Company:" "Peter Chamberlen hath the next Court given him to bring in his arrearages of his debts for his admission," so it is evident that before 1598 his hood had been put on his shoulders and he had been admitted into the livery. In 1607, March 2, there appears the entry: "This date it is ordered that Peter Chamberlen the olde, is granted lysence of absence from ye lectures provided he paye to the Maisters of the Company II s VI d quarterly for the same, the first payments to begin at midsummer next." And so it may be presumed that Peter the elder was already in good practice and could use his time more profitably in attending to professional duties.

It is remembered that at this period, though physicians might practice surgery, surgeons might not practice physic, and frequent complaints are to be found in the Annals of the Royal College of Physicians of the elder Peter's not confining himself to

the practice of surgery and in consequence being censured and fined. In 1612 he was again before the College "being demanded if he gave not phisicke to one Mrs. Miller in my Lo. Mayor's house he gave her a drinke for three days to dry up a moisture which he supposed came from her backe; the drink he made himselfe." It was composed of salsae, sassafras, and betonie. He conceived they wear the whits because he sawe yellow staynings uppon the clothe." It was unanimously agreed that he had given the medicine wrongly, and his practice condemned. Accordingly on the thirteenth of November a warrant was signed for his apprehension and removal to Newgate prison.

Peter the elder did not submit passively to his imprisonment, but brought the whole of his large influence to bear. The Lord Mayor at his request, and probably influenced by Thomas Chamberlen, Master of the powerful Mercers' Company and cousin of the prisoner, interceded for him. A demand was made by the judges of the kingdom that he be discharged, but this demand the College could and did deny, Peter being committed for *Mal Praxis*. Lastly, the Archbishop of Canterbury, at the mandate of the Queen, prevailed with the president and censors and the prisoner was released.

The College did not like this interference, and the Archbishop was interviewed by the President and Censors. He received them pleasantly and declared that he would hereafter vigorously resist any assault upon the privileges of the College.

In XII James I., 1614, among the physicians, surgeons, and apothecaries receiving fees and annuities, payable out of his Majesty's exchequer, occurs the name of Peter Chamberlen, surgeon to the Queen, £. 40. In Peter's will also occurs "My diamonde ringe which I had of Queene Anne." So it was doubtless due to Peter's attending the Queen in her confinements that she used her influence in endeavoring to obtain his release from prison.

The Court and Times of Charles I. show he was also surgeon to Henrietta, wife of Charles I. The following interesting note occurs.

"The Queen mis-carried of her first child. She had neither mid-wife nor physician about her, only the poor town mid-wife of Greenwich was sent for who swooned with fear as soon as she was brought into the Queen's chamber, so she was forced presently to be carried out; and Chamberleyne the surgeon was he alone that did the part of a mid-wife. This took place in 1628."

The probability is that Peter the elder lived to be about sev-

enty to eighty years of age. Little is known of his wife, other than that her name was Anne. He left one child, Esther. His estate was for that period of time a large one.

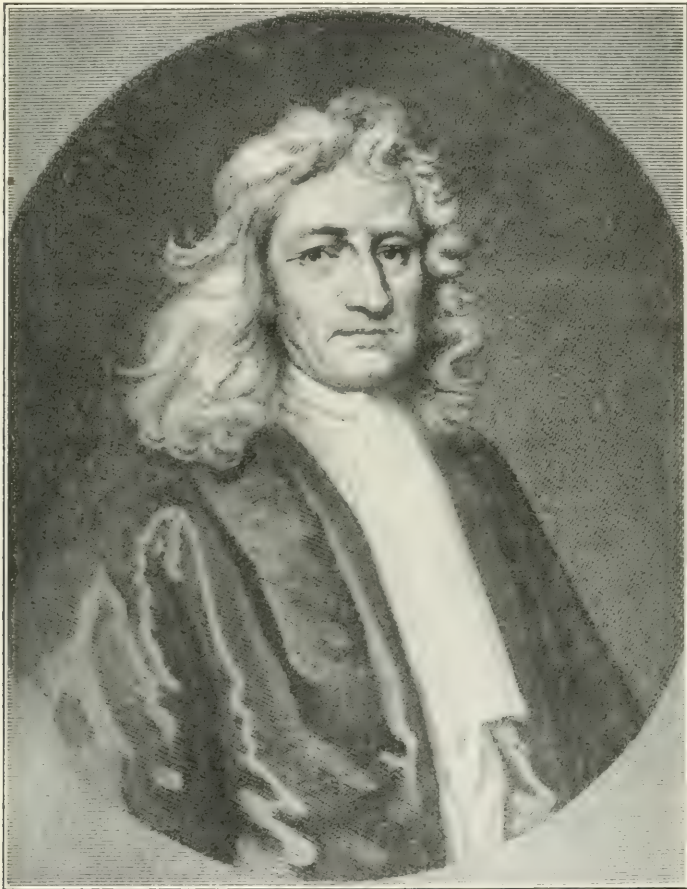
Although there are in the Southampton Register records of the birth of Jacques and Jaune, a brother and sister, no trace of the birth of Peter the younger is to be found. Fortunately there appears in the "Annals of the Barber Surgeons" a deposition in which one Robert Flewery, Martha Molin and Peter Chamberlen the elder testify that they were present at the baptism of Peter Chamberlen the younger, and that he was born at Southampton, on a Sunday about 5 o'clock in the morning, the eighteenth of February, 1572.

The reason for this record was that the Barber Surgeons had ordered "that from henceforth no alien or stranger born out of his Majesty's dominions shall be capable or eligible to bear or take upon him any place or places of office of a Master or Governor of the Company," and the date of this registration, which is 1596, corresponds with the probable date of the admission of Peter the younger to the company.

Like Peter the elder, Peter the younger was in constant conflict with the College of Physicians. There were many accusations against which he could give no satisfactory explanations, and he was often fined. Peter sought to put an end to these prosecutions by appearing before the College for examination, which he did for the first time in 1610. He does not, however, seem to have proceeded further, and there are records of several other summons after this date; once for insolent language to a Dr. Fludd and other members of the College, and often for malpractice. On one of these occasions the Censors claimed he did not know what differences there were in the pulse and called it palpitation.

In 1616 a meeting was held at the College of Physicians of London to deliberate about letters patent for the incorporation of midwives, at this meeting Peter the younger appears to have been present for in endeavoring to incorporate the midwives; his project was opposed by the College and a note shows that the following question was put to him, "whether, if a difficulty in a case of labor were propounded to any member of the College, he would not answer and judge more correctly than any obstetric surgeon whatever, in spite of his boast that he and his brother, and none others, excelled in these subjects." This query appears to have been suggested by a feeling of annoyance at the assump-

tion of superior skill by the brothers, and certainly proves that they were in possession of some secret method of practice, which they believed enabled them to treat difficult labors in an exceptionally advantageous way. Aveling asks if there can be



Aveling says: "This portrait is taken from a well-known engraving beneath which is "Paul Chamberlen, M. D., 1658." It is really the likeness of Dr. Peter Chamberlen, for at this date Paul was only twenty-three years old, while the former was fifty-seven, which age corresponds precisely with the features represented above.

any doubt what this secret method was. We learn that Peter the elder was also interested in this project, one which was in all probability a selfish one as will be shown by the accusations against Dr. Peter, Peter the younger's son who attempted to ac-

comply the same purpose later on. In regard to the incorporation a petition was sent to his Majesty, but was referred by him through his lords to the College of Physicians who, though they granted that means should be taken to better the skill of the midwife, they saw no reason why they should be incorporated, and the project was abandoned.

Peter the younger married Sara de Laune, a sister of the wealthy apothecary, Gideon de Laune, whose bust is in the Apothecaries Hall. She had a large family. Peter, who is known as Dr. Peter, was the eldest; there were also Marguerite, Sarah, William, Ane, Nathaniel, Henry, and Robert.

The record in the French Church, Threadneedle Street, shows that Dr. Peter Chamberlen was born in the parish of St. Anne, Blackfriars, on the eighth of May, 1601.

It is evident that Peter the younger was determined his son should be well endowed with medical diplomas, the want of which had been a constant source of annoyance to him; accordingly Dr. Peter was sent to Merchant Taylors School, and from there, when only fourteen years old, went to Cambridge, being admitted to Emanuel College. Afterward he went to Heidelberg and Padua and at the latter university received the degree of Doctor of Medicine in 1619, when only eighteen years of age. He was incorporated on that degree at Oxford in 1620, and at Cambridge in 1621.

His diploma from Padua, where he was under Roderico Fonseca, being found ample, he was approved by the College of Physicians on September 16, 1621, for the first examination. On February 8 he appeared for the second time and was approved, and on March 22, was examined the third time when he was recommended to wait and try again with good expectation of success. He did not appear again until July 26, 1626, when he was once more examined, approved, and thereupon elected and sworn.

Two years later Dr. Peter became a fellow of the College by a majority of votes, but it was ordered that "he be gravely admonished for his dress, and no longer follow the frivolous fashion of the youth at Court, and that he be not admitted until he conforms to the custom of the College and adopts the descent and sober dress of its members."

Dr. Peter Chamberlen quickly acquired considerable fame, not only at home but abroad. In 1642 he was appointed by the Barber Surgeons a yearly demonstrator in anatomy and a silver tankard was presented to him with the arms of the Com-

pany engraved on it. In "the Ladies Parliment" by Henry Nevill, 1647, is found the following order of the house: "2. Ordered further that Dr. Hinton (who attended the queen at Exter, where she gave birth to the Princess Henrietta) and Dr. Chamberlen be likewise assistants, that with greater secrecy and ease their Ladyships may be helped out with their most troublesome and pressing affairs." By this time Chamberlen had been appointed Physician Extraordinary to the king and Dr. Munk states that his reputation must have been considerable, for the Czar of Russia wrote with his own hand a letter to Charles I. begging him to allow the doctor to enter his service, understanding that he was willing to do so. Great preparations were made at Archangels, which was then the way from London to Moscow, but a letter from the King arrived excusing his refusal, upon the grounds that as a native Russian Dr. Elmston had studied medicine in England and had returned to his own country, so was capable of filling the office of body physician to the Czar.

At a meeting of the College held the twenty-eighth of August, 1634, at which Dr. Peter was present, Mrs. Hester Shawe and Mrs. Whipp, midwives, presented a petition regarding the incorporation of midwives. The petition is long as is the one following it sent to the Lords. From them it seems Dr Peter Chamberlen had endeavored to incorporate the midwives; have them subservient to him and call on him alone in difficult cases. A few of the paragraphs are interesting, and give an idea of the condition.

"The Humble petition of divers ancient Midwife's, in the city of London, Sheweth. That through the molestation of a Dr. Chamberlane by appointing them to meet at his house once every month without authority, and with intention, as they suppose, to bring about a project of his to have the sole licensing of them or approving of all such as shall hereafter be licensed out of an opinion of himself, and his own ability in the art of midwifery, implying a necessity of using him and no other both in those cases and in all other occasions that shall happen to women with child, presuming that he hath more exact skill than all the grave and learned physicians in the Kingdom in those cases for he threatneth that he shall not repair unto such women as are distressed whose midwives have refused to conform themselves to him."

And later occurs, "Dr. Chamberlane doth often refuse to come to the poor, they not being able to pay him according to his

demands, and for the rich he denies them his help until he hath first bargained for great reward which besides that, they are in themselves dishonest, covetous and unconscionable courses."

The petitions were referred by his Majesty to the Lord Archbishop of Canterbury and his Grace Lord Bishop of London under whose jurisdiction was the granting of licences in midwifery to men and who acted as Censors over those who practised it. They stated that Dr. Chamberlen practised the art of midwifery as a physician and had no more to do with it than other of the Physicians of the College—"whose judgments no doubt are as good as his in any accidents that may befall or concerne women with childe unless it be in the very act of delivrie of unnaturall and dangerous births, to effect which there is necessitye of using instruments of iron, being indeed more properly the work of a surgeon than a physition; so with manuall practize the said Dr. hath applied himself more than others by reason few or none can brook the practice thereof . . . and, further, Dr. Chamberlane's work and the work belonging to midwives are contrary one to the other for he delivers none without the use of instruments by extraordinary violence in desperate occasions, which women never practised nor desyred for they have neither parts nor hands for that act." And so it goes on to where he is even accused of "many crymes in his practize," and ready to be proved against him.

The opposition to Dr. Chamberlen's scheme for incorporating the midwives of London aroused in him the strongest feeling and drew from his pen a reply to the accusations. It was called "a Voice in Rhama, or The Cry of Women and Children." It is a long utterance in defence of a plan which had moved his pious father to present to King James "a design (I thought) so full of pietie that no man would—so full of innocence that no man could—so full of importance and generall concernment that no man durst have opposed."

One important passage follows. "Then fame begot me envie and secret enemies, which mightily increased when my father added to me the knowledge of deliveries and cures of women." These lines are the strongest corroborative evidence that the secret of the midwifery forceps had been communicated to Dr. Peter Chamberlene by his father.

Dr. Peter's next venture was to try to obtain a monopoly on baths and bath stoves. He petitioned Parliament to assist him in carrying out the scheme, and obtained from the Lords an

ordinance granting him the sole making of baths and bath stoves for fourteen years. This ordinance was sent to the House of Commons for concurrence. They were medical baths, which Dr. Peter says "are no foolish novelties, but have been (formerly) the profuse magnificence of mighty Cæsars. They are not confined to hot nor cold countries, since they abound both in Turkie, Persia, Germany, Hungary, Denmark, Swedeland, Poland, and Moscovia, whose strong, great-bodied, healthful people, beautiful children and easie births give no small testimony to the use of bathes."

The approval of the College was sought but they vetoed the project, whereupon Dr. Peter came back with a long argument in which he stated with other reasons that, seventhly, "I do verily believe and daire adventure my life and estate upon it, that I can (by God's blessing) more safely, certainly, suddenly and with more ease cure many (if not all curable) diseases with them than all our College; yea, than all physitians in the world can do without them." However, the project fell through and we find him next petitioning Parliament with a project the idea of which was through bettering the conditions of the poor, paying of debts, etc., so that "the great burthens and molestations of his honour would be eased, the mouths of enemies be stopped, the taxes and groanings of the people removed, the peace of the nation established;" in fact, had the petition gone through, England would have been a Utopia.

Dr. Peter Chamberlen was deeply religious and during the whole of the Commonwealth he was swayed by religious fanaticism and his mind and time so filled that he had little leisure to indulge in making further projects.

From 1649 on there were a great many papers by him on different religious subjects. "Sprinkling in Baptism," "The Imposition of Hands," "The Shipwreck of False Churches," etc. Through some of his papers there is little doubt that he rendered himself very unpopular by the obtrusive and inconsiderate way in which he endeavored to promulgate his opinions. The following entitled "A Dose for Chamberlain and a Pill for the Doctor," being an answer to two scurrilous pamphlets written against the author of "The Asses' Complaint" is an example of the public feeling.

"Now what sayes Chamberlain that Pamphlet monger
What dost thou tell the silly asse of hunger
Should he like thee turn parish clerk and Cozen
Poor souls, and sell his prayers six pence a dozen

Dine upon Midwives fees, and grease his chaps
 With gossips charity and female scraps.
 "But stay what means the Doctor, has he left
 His legal murther and his veniale theft
 His plotting with his druggest and the nurse
 Not for to purge the body but the purse
 And turned a satyrist, Ide thought the man
 Had been confined unto a clos-stole pan
 But tis a mad world, when hell breaks loose and he
 That is a quack talks divinity
 Then leave your scribbling sirrah and send your verses
 Unto your patients to wipe their a—
 Heaven keep this City from quacksalving knaves
 That send sound men to their untimely graves."

In 1666 Dr. Peter Chamberlain was in Holland, and while there threw all his enthusiasm and energy into a new project from which he expected extraordinary results and in order to secure the advantages for himself and family, applied to many countries for patents. He wrote to his son, Hugh, to secure the patent in England. The state papers show Hugh's attempt to carry out these instructions.

"Upon the Peticon of Hugh Chamberlaine, M. D., who desires to have a patent for exercising ye invencon of making ships to saile within two points by the helpe of the winde, etc."

Hugh failed in this attempt so his father came to London in person. He had already obtained patents in France, Venice, and the United Netherlande and though "learned mathematicians and expert seamen" believed it impossible, by such arguments as "It stands not with the wisdom of Parliament to refuse a thing so beneficial, for want of a model or demonstration," and others equally convincing, the patent was granted. Whereupon Dr. Peter immediately conceived the idea that all kinds of land vehicles might be propelled by wind and sail and so obtained patents on these.

It is needless to add that this, like the rest of Dr. Peter's projects failed to secure the material assistance and confidence of the public, and even he speedily abandoned the wild scheme.

His next grant from the king (1668) was "a new art or way of writing and printing true English, whereby better to represent to the eye what the sound doth to the ear than what is now practised." This was phonetic writing, for which a grant was given for fourteen years.

His eccentric life and writings had rendered Dr. Peter, liable to remarks to which his exceedingly sensitive nature could not resist a reply. It was called "Answers to Reports of Being Mad, Lost, and a Jew." The report of Dr. Peter's being a Jew no doubt arose from his keeping the Jewish Sabbath. In this defense, the simplified spelling does not seem to occur.

At the close of his long life, Dr. Peter conceived one last great project, more difficult to carry out than any he had yet attempted. The reconciliation of the churches. He writes to Archbishop Sheldon, "in plain English (my lord) who more fit and capable than your grace to invite the pope, cardinals and all the heads of the Jesuits, Sorbonists, Jansonists, Augustins, Dominicans and Franciscans, together with the Chief of the Lutherans, Calvinists, Socinians, Armenians and whoever else are of Paul, Apollo or Cephas to meet in Post Paper and Conspire.'

Dr. Peter Chamberlen died in his eighty-second year at Woodham, Mortimer Hall near Maldon, Essex, in 1683. He had been physician in ordinary to three kings and queens of England; namely, King James and Queen Anne, King Charles I., Queen Mary, King Charles II., and Queen Katherine. He had two wives. The first, Jane Middleton, from whom he had eleven sons and two daughters and a second wife, Ann Harrison, from whom he had three sons and two daughters.

On his tomb in Woodham, Mortimer, churchyard occurs an epitaph in verse ordered by the doctor himself. The first two lines are as follows: They at least show that his opinion of himself was a good one.

"To tell his learning and his life to men
Enough is said, by Here lyes Chamberlen."

Though no record has been found of his birth, Hugh Chamberlan, Senior, was probably born in the parish of St. Anne, Blackfriars, about the year 1630. Though he is constantly called Dr. Hugh Chamberlen, no evidence can be discovered of his having taken a degree.

On the 28th of May, 1663, Hugh was married by license at St. Pauls' Covert Garden, to Dorothy, daughter of Colonel John Brett and in 1666 we learn from a paper in the Record office that he was interested in freeing the City of the plague.

The most important event in the medical biography of Hugh Chamberlen, Senior, is the evidence found described by Mauriceau, in his "Observations sur la Grossesse et l'Accouchement."

Mauriceau happened to have, when Chamberlen was in Paris, a rhachitic dwarf in labor, whom he was unable to deliver. The pelvis was so small that he could not even introduce his hand to do a version and extraction the only other method of obtaining a living child at that time besides Cesarean section, which he had considered, but given up because he knew it would mean death to the mother.

Chamberlen's reputation was known to Mauriceau and he was asked to see the patient. Chamberlen agreed to deliver the woman in a quarter of an hour, but after trying strenuously for three hours and seeing that she was going to die, gave up, saying it would be impossible for anyone to deliver her. Chamberlen attempted to sell Mauriceau the family secret for 10,000 livres, and though the secret was not purchased, the two parted as friends and Chamberlen agreed to translate Mauriceau's book on obstetrics into English. For many years the work continued to be the most popular text-book with all who practised midwifery. The first edition appeared in 1672 and contains a preface by the translator among many of the remarkable statements in which is the following important one.

"In the seventeenth chapter of the second book, my author justifies the fastening hooks in the head of a child that comes right, and yet because of some difficulty of disproportion cannot pass; which I confess has been, and is yet the practice of the most expert artists in midwifery, not only in England, but throughout Europe; and has much caused the report, that where a man comes, one or both must necessarily die; and is the reason of forbearing to send, till the child is dead, or the mother dying. But I can neither approve of that practice, nor those delays; because my father, brothers, and myself (though none else in Europe as I know) have, by God's blessing and our industry, attained to, and long practised a way to deliver women in this case, without any prejudice to them or their infants."

Hugh had now obtained considerable medical reputation, and his father anxious to procure for him royal patronage, presented to the King a petition in which he humbly prayed that his eldest son might be admitted in ordinary, to supply the defects of his aged attendance; which grant was made in 1672-3 and Dr. Hugh Chamberlain made one of his Majesty's Physicians in Ordinary in Reversion after the decease of Sir John Hinton, who at present enjoyed this title. The appointment came through Hinton's death in 1673.

In 1685 Hugh Chamberlen, Senior, published a small medical work entitled "Manuale Medicum or a Small Treatise of the Art of Physick in General and of Vomits, and the Jesuits Powder in Particular." In it all diseases were treated by evacuation; bleeding, sweating, purging, and vomiting—of the last he writes, "Even as the womb in labour, with collects strength from all parts, contracts itself closely to the upper parts whereby it may bring forth the birth; so also the stomach tyred with the injury of things offensive, by compressing the bottom is by force wholly moved upward, throwing out all that is offensive by vomit."

The tone of the book was evidently not intended to secure the good will of physicians, and as a consequence, or it may be a coincidence as Aveling says, the College took action against him. Hugh Chamberlain had treated a Mrs. Phoebe Willmer "who was six months gone with child and had a paine in her right side under her short ribb and had difficulty in breathing. In the space of nine days he had given her four vomits, four purges and caused her to be bled three times to the quantity of 8 ounces each time; then gave her something to raise a spitting, after which swellings and ulcers in her mouth followed; about three or four days after taking this, she miscarried, and it was attended with loosenesse and she continued languishing till she dyed." It seems he also refused to have anyone in consultation. For being found guilty of the offense of mal praxis, in high degree, Hugh was fined ten pounds and committed to the goal of Newgate, there to remain till he should be thence discharged by due course of law.

"Afterward the Beadle was called in and ye said warrant for his committment to Newgate sealed by the four Censors delivered by the Beadle to a Constabel. Whereupon Mr. Chamberlain coming into the Censor roome to know if he were a prisoner to whom the Vice-President answered that he was committed till he paid the fyne sett upon him wch was ten pound. He presently pulled gold out of his pocket and would have had the board receive it. But they refused so to do and told him, he must pay it to the Beadle who would hand it to the treasurer or might give bond, wch latter upon second thoughts he made choyce of and accordingly did give bond of 20 lb. to pay 10 lb. to the treasurer within one month after."

It is a letter from Dr. Hugh Chamberlen, Senior, to the Princess Sophia which has always been quoted as a most important evi-

dence that the pretender to the Crown was not a supposititious child. Chamberlen was sent for to attend the labor but was at Chatham and arrived an hour too late. More to the particulars of the birth, he could not offer, but did subjoin a few probable circumstances. "He was told by the Duchess of Monmouth at a time wholly occasioned by chance, and by one then not obliged by the Court," that she saw her Majesty shifted and her belly was very large. Chamberlen took this to be genuine and never questioned it, and goes on further to say, "I am certain no such thing as the bringing a strange child in a warming pan could be practised without my seeing it; attending constantly in and about all the avenues of the Chamber."

In 1692 Hugh Chamberlen, Senior, attended another royal personage, the Princess Anne of Denmark, when a son was born which immediately died. "He had a hundred guineas for his pains." When the Ex-King was at St. Germain, Dr. Hugh, Senior, was sent for to assist at his Queen's delivery, but a pass was denied him, and Mary Louisa entered this world without his assistance.

In 1694, Hugh Chamberlen, Senior, published a second medical work, "A Few Queries relating to the Practise of Physick." He doubtless had the action of the College against him in mind when he penned the 65th query. "Whether women with child and in child-bed may not safely, when the disease requires, both vomit, bleed and purge, provided it be with due caution."

He next published "A proposal for the better securing of health." In it he advised that a yearly sum be assessed upon each house, according to the means of the individuals, that the rich as well as the poor should be advised and visited by approved and skilful surgeons. He stated that the pox, midwifery, and cutting for the stone should have an additional allowance settled "because the pox may not be hereby encouraged, and deliveries require mighty pains, and unseasonable hours, and the stone is not only a particular dexterity, but requires much attendance."

We now come to a proposal, which shows Hugh Chamberlen, Senior, in a new and a bad light, but as regards the circumstances of the family secret the result was important. The proposal was the formation of a Land Bank, one for which it would be the special buisness to advance money on the security of land.

For ten years Chamberlen devoted himself to this project and must have lived in a perpetual state of excitement and had constantly to answer to the attacks of rivals. These disputes did not

always end peacefully, as the following quotation from Sanford shows: "1698, Thursday 24, February; Tuesday last Mr. Shugsby who belonged to Dr. Chamberlain's Land Bank killed one Captain Watts at the Horn and Horse-Shoe Tavern in Chancery Lane."

In December, 1693, after some of the more crude ideas of the proposal had been changed, Chamberlen laid his plan in all its naked absurdity before the Commons and petitioned to be heard. The whig leaders saw that the scheme was a delusion and must fail, but they had against them not only the whole Tory party but also their masters and many followers. The necessities of the state were pressing and the offers of the projectors were tempting, the bank would advance two million and a half at 7 per cent. The bill passed both Houses and on the twenty-seventh of April received royal assent.

The Land Bank soon failed, and if we are to accept the testimony of some writers, Hugh Chamberlen, Senior, did not leave the business with clean hands, while the poem by an anonymous writer gives a more damaging account of the famous doctor. It is in part as follows:

Hue and cry after a Man-Midwife, Who has lately
delivered the Land-Bank of their money.

If in any good person in Country or Town,
Either Courtier, or Citizen, Sharper, or Clown,
Gives Tidings or Tale of a famous Projector,
Whom great-bellied Ladies have might respect for,
Shall at the Land-Bank be as nobly rewarded,
As by the Trustees it can well be afforded.
He's a little old Man, very pale of Complexion,
Into many deep things makes a narrow inspection,
Among his profession he's famed as a Topper,
By some called a Midwife, by others a Groper.
From his office in Queen St. he lately has started,
And left his Society half broken-hearted,
Thus show'd them a trick one would think was beneath him
And run with their Stock, marry Devil go with him:
But yet he was so civil unto the Trustees,
Tho' he's taken the chest, he has left 'em the Keys,
Of Iron 'twas made, and secured with Chains,
Being Lock'd with abundance of Cunning and Pains;
Which mingles their Sorrow with some little Pleasure,
To think how 'twill plague him to come at the treasure,
By common report into Holland he's fled;

If so, the Land Bank is brought finely to Bed:
 For if to the old place of refuge he's run,
 Adzooks you're all Cozened as sure as a Gun
 And you that are chous'd for your money may morn,
 For Holland, like Hell, never makes a Return,
 If the Coin was inclosed (like the soil in a Gizzard)
 In an Adamant Coffe, lock'd up by a Wizard,
 They'll shew him a way, by some Power infernal,
 To break up the Shell and to take out the Kernel.
 To give you his Character truly Compleat,
 He's Doctor, Projector, Man-Midwife and C(heat)

There seems to be some doubt as to Hughs, Senior, leaving immediately for Holland, for though all trace of him is lost in England in 1700 he was urging the adoption of a Land Bank in Scotland, where it is probable he lived for a time. One of his last projects, strange to say, has been the only one destined to be realized; namely, the union of the Kingdoms of England and Scotland. It is not known whether he lived to see the consummation of the union, but the concise and logical way in which he placed before the public its advantages must have had influence. His proposal for the election of representative peers and compulsory education are proofs of his astuteness and far-seeing policy.

When and where Hugh Chamberlen, Senior, died is not known, but it is known that for a time he practised in Amsterdam and while there sold the family secret to Roonhuysen, and that shortly afterward the Medico-Pharmaceutical College of Amsterdam was given the sole privilege of licensing physicians to practise in Holland, to each of whom under pledge of secrecy, Chamberlen's invention was sold for a large sum. This condition continued for some years, until Vischer and Vander Poll purchased the secret in order to make it public, when it was found the device consisted of only one blade of the forceps. Whether this was all Chamberlen sold to Roonhuysen or whether the College swindled the purchasers of the secret is not known.

Dr. Paul Chamberlen was the second son of Dr. Peter Chamberlen. Nothing is known of his early life or from what university he graduated. He practised in London as a man midwife and we know from his brother, Hugh, that he was in possession of the family secret. Emulating his brother as a financier, he too had a way by which "The Government may be suppl'd at all times with whatsoever sums of money they shall have occasion for without interest."

In medicine he was a quack and is best known through his invention of the "Celebrated Anodyne Necklace." It was used by children to ease the breeding and cutting of their teeth and to ease the pain of women in labor. The necklace was worn as any other while a drop of liquid coral, which came put up with each necklace was run gently to and fro over the gums.

The advertisement from the "Daily Journal" states that, "it was to be had up one pair of stairs, at the sign of the anodyne necklace, just by the Rose Tavern without Temple Bar." Its price was five shillings or 48s a dozen; and further on "the necklace is a proper thing not only for a new year's gift for god-fathers



Woodham, Mortimer Hall, the home of Dr. Peter Chamberlen, where the forceps were found. (From "The Chamberlens," Aveling.)

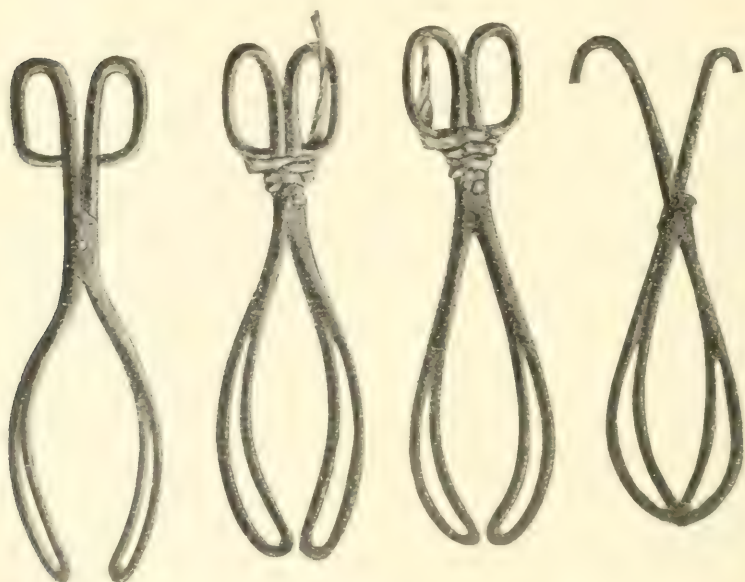
god-mothers, relations, friends, and acquaintance, to give to children and others, but even for a present for anyone to give their friends at any time of the year."

Dr. John Chamberlen was the fourth son of Dr. Peter and also practised midwifery. His house was in Essex Street. Little of importance is known of his life, not where he graduated in medicine.

Hugh Chamberlen, Junior, was the eldest son of Hugh, Senior, and was born in 1664. He was educated at Trinity College, Cambridge, and graduated A. M. per Literas Regias in 1683. In 1689 he was created Doctor of Medicine at Cambridge (Comitiis Regiis).

As compared with that of his father and grandfather's, Hugh's, Junior, life was calm and uneventful. He lived in King Street, Covert Garden, then the most fashionable part of London, and was established not only as a popular obstetrician, but as a trustworthy physician.

Among his patients and friends none had a higher esteem for him than John Sheffield, Duke of Buckingham, and his Duchess. After the death of the Duke, Hugh Chamberlen, Junior, lived on



The four pairs of forceps found at Woodham, Mortimer Hall.

the most intimate terms with Catherine, Dutchess of Buckingham, and it is known also that he died at Buckingham house. The *Country Journal* or the *Craftsman* gives the following notice:

Saturday, June 22, 1728.

"The eminent physician and man-midwife, Dr. Hugh Chamberlen who died on Monday night was grandson of the famous Dr. Peter Chamberlen, who with his father and uncles were physicians to King James I., King Charles I., King Charles II., King James II., and King William, to their respective queens and to Queen Anne. He was the last of that ancient family who practised the art of midwifery in the Kingdom except Dr. Walker in Great

Suffolk Street who is a grandson to the forementioned Dr. Peter Chamberlen."

During the latter years of Hugh s, Junior, life he allowed the family secret to leak out and it came into general employment in England. The instrument was used by Drinkwater, who died in 1728, and was well known to Chapman and Giffard. The former, writing in 1733, says: "The secret mentioned by Dr. Chamberlen was the use of the forceps now well known by all the principal men of the profession, both in town and country."

In Westminster Abbey is a magnificent cenotaph erected, doubtless at the suggestion of his mother, by her youthful son Edmund, Duke of Buckingham. It is placed in the north aisle of the choir and is a very handsome composition of white and variegated marbles.

In 1813 what were probably the original forceps invented were found upon the estate of Dr. Peter Chamberlen, Woodham, Mortimer Hall, by Mrs. Kemball, the wife of a rich brewer who in 1715 had purchased the place and bequeathed it to the Wine Cooper's Company.

A letter from Dr. May of Waldon to Dr. Robert Lee, written in 1861, gives an interesting account of this find. "The following account of the discovery of Dr. Chamberlen's instruments in June, 1813, I have received from Mrs. Codd, now a resident in Maldon, who was, at the date mentioned, and for several years previous, resident at Woodham, Mortimer Hall, her husband being the occupant of the place. Mrs. Kemball, the mother of Mrs. Codd, being on a visit to her daughter in the year mentioned, happened to go into a closet above the entrance porch. She was struck with the appearance of a cork, or a small disc of wood—Mrs. Codd forgets which—in the floor; a second one was then noticed on a level with the boards. On investigation these were found to cover each a screw head. On pursuing the enquiry, a trap-door with small sunken hinges, was noticed; on elevating this a cavity between the floor and ceiling was brought to view. This contained some boxes in which were two or three pairs of the midwifery forceps, several coins, a medallion of Charles I. or II., a miniature of the Doctor damaged by time, a tooth wrapped in paper, written on, 'My husband's last tooth,' some little antique plate, a pair of lady's long yellow kid gloves, in excellent preservation; a small testament, date 1645. These three latter articles I have seen in Mrs. Codd's possession. The space under the floor is about 5 1/2 feet square and about 12 inches in depth. There are two pieces

of iron projecting from under the boards, with holes in them for the reception of the screws in the trap. This remains now in the same condition as it was when discovered forty-eight years ago. The concealment was evidently made subsequent to the death of Dr. Chamberlen, which occurred in 1684, as the testament above alluded to bears a manuscript date of 1695. The instruments were taken possession of by Mr. Carwardine, a friend of the family, then a practising surgeon, now retired, and residing at Earl's Colne Priory, in this country. That gentleman took them to London, and presented some of them either to the Medical and Chirurgical Society or one of the Hospitals."

The description of the forceps is copied from Aveling.

No. 1.—A very rudly constructed forceps, one-half 12 1 2 inches, the other 13 inches long; the length of blade to joint in both 8 inches; One handle is 4 1 2 inches and the other 4 inches long, and both terminate in blunt hooks bent outward. The two portions of the instrument are united by means of a rivet, which can be unscrewed. Its head has not the usual notch in it, but is made oval. The apices of blades, when the instrument is closed, touch one another. This was doubtless the first midwifery forceps constructed by the Chamberlens, and from which sprung all the various forms now in use.

No. 2.—Forceps, 12 inches long; the length of blade to joint 9 1/2 inches; the length of fenestrum in one blade 8 1/2 inches, in the other 5 1/2 inches; the breadth of fenestrum in the former 1 1/4 inches, in the latter 1 1/8 inches. The handles are 3 1/4 inches long, and looped large enough to admit two fingers on one side and the thumb on the other. The two portions of the instrument are united by means of a braided cord having a knot at one end and a tag at the other. This is passed through the apertures usually occupied by a rivet, and enables the operator to unite or disunite the two portions of the instrument.

No. 3.—Forceps, 12 inches long, similar in construction to the last, except that the fenestra are of equal size—6 inches long and 1 inch wide.

No. 4.—Powerful forceps, 13 inches long; the length of blade to joint 8 inches; the length of fenestrum 5 inches, and breadth 1 inch. The handles are looped and 5 inches in length. The two portions of the instrument may be united by means of a rivet fixed in one-half, and fitting loosely into a perforation in the other. The divergence of the apices when the instrument is closed is 1 1 4 inch.

It has been the generally recent opinion that Dr. Peter Chamberlen invented the obstetrical forceps, but Aveling who has gone into the subject thoroughly and Sanger and Budin who have also investigated the history of the instruments have come to the conclusion that one of the brothers, probably Peter Chamberlen the elder, was the originator. Aveling asks if it is likely that Peter the elder and Peter the younger would have reached the eminence they undoubtedly attained had they not been in possession of superior skill in their profession. Everything was against their success. As foreigners they were suspected and hated, and as refugees they were dispirited and poor. Skill, industry and energy could alone have enabled them to surmount the difficulties which everywhere presented themselves; yet in spite of all these disadvantages, Peter Chamberlen, the elder, was selected to attend the Queen in her confinements, and both brothers secured powerful friends, raised themselves to honorable positions, and amassed considerable wealth. You will remember that at the time of the attempted incorporation of the midwives, Peter the younger boasted of his and his brother's superior skill in difficult labors.

As to which brother, a line in the introduction to Smellie's Midwifery, Aveling says came like a flash of light in hopeless darkness and clears up the mystery as well as it is ever likely to be. In speaking of the instruments used by the Chamberlens he adds—"and said to be contrived by the uncle," "The uncle" can mean no other than Peter Chamberlen, Senior, for Dr. Peter Chamberlen had no brothers practising obstetrics.

Peter, Senior, was born, as has been said, in Paris, from whence,, when a youth, he fled with his father to England. As was the case with many of his brother Huguenot refugees, he rewarded the country for its shelter, by bestowing upon it the priceless and beneficent bounty of his skill and genius.

TORSION OF THE NORMAL UTERINE APPENDAGES AND THE REPORT OF A CASE.

BY

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(The tube and ovary were exhibited as a card specimen before the Philadelphia Pathological Society, March 9, 1911.)

THE history of the case is as follows: The patient was nineteen years of age and unmarried. The previous history was negative. The menses were normal. The onset had occurred at fourteen years of age. Menstruation had been regular every four weeks and lasted for four or five days. Slight dysmenorrhea of the congestive type was usually present for a few days previous to and during the first day of the flow. The onset of the trouble for which the patient was operated upon appeared suddenly, three days before an expected menstrual period. While the patient was sweeping with a broom she was suddenly seized with a sharp agonizing pain in the right iliac fossa. This pain was of a cutting, stabbing character and was so severe as to cause vomiting. Within half an hour she was seen by her family physician, at which time her condition was such as to suggest a ruptured extrauterine pregnancy. At the time of the physician's arrival, the patient was in a state of partial collapse. She was pale; the skin was leaky; the temperature, 98; the pulse, 136; and respiration, 32. She complained bitterly of excruciating pain, chiefly about or a little below McBurney's point. In a few hours the patient's general condition improved and when she was brought to the hospital, six hours after the onset of the attack, her condition was as follows: The abdomen was flat. Both recti were rigid, but on the right the resistance was much more marked. Abdominal palpation was otherwise negative. Percussion revealed nothing abnormal. The temperature was 98; pulse, 120; respiration, 26; leukocytes, 9,400. As will be seen, the symptoms were, at this time, very suggestive of appendicitis, especially as the bowels had been constipated for a day or two. Pelvic examination showed the hymen in tact and no evidence of infection about the external genitalia. A rectal examination revealed the uterus normal in size and position. Slightly to the right and posterior to the uterus was a tense, fairly hard, kidney-shaped tumor about

the size of a small lemon. This had a limited range of motion and was exquisitely tender. On the left side the appendages appeared normal. The diagnosis was made of a small ovarian tumor with a twisted pedicle. On opening the abdomen this diagnosis was apparently confirmed. The ovary was enlarged to twice its size. It was deep, blackish-purple in color and evidently under considerable tension. There were no adhesions present. The ovary was twisted upon the broad ligament, 180 degrees from left to right. The tissues which formed the pedicle were black. The tube was somewhat congested, deep reddish in color, and was rotated about 40 degrees in the same direction as the ovary. This torsion was evidently secondary to that of the ovary. The round ligaments were normal as were the appendages of the opposite side. No free blood was present in the pelvis nor was there any evidence of inflammation found in the abdominal cavity, although a thorough search was instigated. A salpingo-oophorectomy was performed, and the appendix, although macroscopically normal, was removed and the abdomen closed by the usual layer method. The convalescence was normal. The wound healed by first intention. The patient was out of bed on the twelfth day and left the hospital cured on the fifteenth day. The pathological report from the laboratory of Gynecological Pathology, University of Pennsylvania, on the specimen was as follows: The specimen consists of the right tube and ovary and the vermiform appendix.

The right tube is 8.25 cm. in length. The surface is free of adhesions. The abdominal ostium is open. The inner two-thirds of the organ is small and almost atrophic in size. The diameter at the uterine extremity measures 3.5 mm. and through the center of the isthmus 4 mm. At the ampulla the tube widens out a little more than normally, the greatest width being 7 mm. The walls appear normal in thickness. The lumen is patent and contains a little free blood. The tube is deeply congested, but is much less engorged than the accompanying ovary.

The right ovary is enlarged, but its normal shape is preserved. It measures 6 cm. in its long diameter by 2.30 cm. antero-posteriorly and 4 cm. in depth. The surface is smooth and free of adhesions. The organ is tense, almost semifluctuant to the touch and of a deep purplish-black color. Its superior portion is somewhat drawn out although its attachment to the broad ligament could hardly be called a pedicle. This portion of the specimen is black. By twisting the ovary from right to left, the

original torsion can easily be reproduced. On section through the organ the capsule is found to be thin and stretched out. The ovarian tissue is deep purplish-black. It is soft and considerable blood stained serum follows the knife. A small cyst, filled with a dark blood clot, is present in the inner pole. This has a diameter of 4 mm. With this exception, the ovarian substance appears solid. The broad ligament at the point of ovarian attachment is congested.

Appendix.—The vermiform appendix is 6.5 cm. in length and is macroscopically normal.

Histological Description:

The Right Tube.—Section from the isthmus of the tube exhibits engorgement of its blood-vessels, but is otherwise normal. Section through the ampulla shows the peritoneal surface smooth, the muscularis normal in thickness, the mucus folds swollen and blunt. Their ends are free. The investing epithelium consists of a single layer of cylindrical cells which are normal. The stroma of the plica is somewhat infiltrated with free blood. All the blood-vessels of the tube are engorged and this is especially true of the veins. The lumen is empty.

The Right Ovary.—Sections from four different portions of the ovary all present the same general histological characteristic, *i.e.*, normal ovarian tissue densely infiltrated with blood. Indeed, this engorgement was so marked as to obscure the character of the tissue until sections were mounted in which the blood had been previously partially dissolved out. The small cyst noted in the macroscopic description proves to be a Graafian follicle. The blood-vessels are greatly dilated. The capsule is thin and contains free blood. Nothing in the least suggestive of tumor formation is present. The entire picture is that of a normal ovary, densely infiltrated with blood and evidently under considerable tension.

Appendix.—Sections from the base and tip of the vermiform appendix prove this organ normal.

Histological Diagnosis.—Torsion of a previously normal ovary.

Engorgement and second ary involvement of the Fallopian tube. Normal vermiform appendix.

Torsion of the normal appendages is an extremely rare condition. In a fairly extensive search through the literature only two cases have been found. The first of these was reported by Aulhorn (*Central. f. Gyn.*, No. 16, 1910) and was a case of torsion of the right Fallopian tube in a woman three months' pregnant.

The chief symptom in this case was sudden severe pain in the right iliac fossa. No fever was present. There was, however, the history of previous attacks of a similar nature although somewhat milder. The right uterine appendages were twisted upon their long axis, 180 degrees. The tube was engorged, thickened and distended. The second case is that of Stark's (*Jour. Obst. and Gyn., Brit. Emp.*, Feb., 1911). The patient was a spinster, forty-six years of age. Her general previous history was negative. She had, however, suffered from two previous attacks before operation. The attacks were all of the same general character although the third was the most severe. The chief symptom was sharp pain in the left iliac fossa, occasionally so severe as to cause nausea. The attacks were accompanied by constipation. The first two were relieved as soon as the bowels were moved. If the pain had been on the right instead of the left, the case could easily have been mistaken for one of appendicitis. Rectal examination revealed a soft semifluctuant mass on the right side about the size of a tomato. At operation a little free blood was present in the peritoneal cavity. The left tube was enlarged, dark purple, and twisted upon itself near the uterine extremity, three times from right to left. The abdominal ostium was open and among the fimbria were a few clots of dark blood. The tube was normal in length. The left broad and round ligaments were also normal. The left ovary presented no abnormalities. The appendages on the left side were free of adhesions. On the right side was a dermoid cyst. Histological examination of the left tube proved this organ normal except for the changes secondary to the torsion. It was carefully examined for pregnancy. Stark is at a loss to account for the cause of the torsion.

It will be noted that both of these cases were complicated. The first case was associated with pregnancy and the second with an ovarian neoplasm of the opposite side. Torsion of the pedicle of ordinary ovarian tumors is quite frequent and can be easily understood. As an often more or less irregular shaped tumor, perhaps attached by a long pedicle, rises out of the pelvis and pushes past the promontory of the sacrum, rotation is natural enough; doubtless in many cases peristalsis or adhesions are also active etiological factors in the production of this condition. The author has seen one case in which torsion was apparently produced in a large abdominally situated ovarian tumor by the patient turning suddenly from one side to the other while she

was in bed. Torsion of normal appendages is, however, much more difficult to explain. It has been suggested that in some of these cases there have been light adhesions present which either ruptured spontaneously shortly after the torsion had occurred or were torn asunder during the course of the bimanual examination. This, however, does not appear to have been the etiological factor in any of the above cases and, furthermore, in our own case the previous history failed to contain any evidence of previous trouble. A more likely explanation seems to be that previous to the twist occurring, the ovary, perhaps originally large and heavy, had drawn away from the broad ligament forming a sort of pedicle. In our own case the attachment of the ovary measured 1.30 cm. in length and the ovary was probably rather larger than usual even before engorgement. Another possible factor, unfortunately not noted in our own or either of the two other cases, is the possibility of an associated sigmoid ptosis. It seems quite possible that a heavy, overloaded and prolapsed flexure sigmoid might, by its peristaltic action, be productive of a condition of this kind if associated with a prolapsed and enlarged ovary. As bearing upon this point, it will be noticed that two of the three cases of torsion were definitely associated with constipation, a frequent symptom of ptosis of the sigmoid. The fact that in Stark's case the attacks were in all cases accompanied by constipation and were twice relieved by the emptying of the lower bowel, is at least suggestive. Constipation also tends to produce congestion of the pelvic organs. The fact that our case occurred just prior to an expected menstrual period, and that Aulhron's case was associated with pregnancy, would seem to indicate that pelvic congestion should be considered as a factor in the production of torsion of the normal appendages. The rotation once having taken place, the subsequent changes in the tube or ovary can easily be understood.

The clinical symptoms produced by torsion in normal appendages if occurring on the right side seem somewhat similar to those of appendicitis. The temperature and leukocytes are, however, apt to be normal. Pain is usually the predominating symptom. These cases demonstrate the necessity of a pelvic examination in every case of supposed appendicitis occurring in women, for while the treatment would probably in both instances be operative, it is far preferable to make a median incision in the presence of a pelvic lesion, apart from the satisfaction of a correct diagnosis.

PULMONARY EMBOLISM AND THROMBOSIS FROM
THE OBSTETRIC STANDPOINT.*
REPORT OF A SUGGESTIVE CASE.

BY

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A MULTIPARA, aged thirty-four, who during the seventh month of gestation had some bleeding from the uterus, was sent to the University Maternity with the provisional diagnosis of placenta previa. As no further bleeding occurred she was, at her own request, allowed to return home. She was later sent by her physician to the Presbyterian Maternity, coming under my care June 6, 1908.

A physical examination at this time showed her to be in apparently good health. The heart and lungs were normal. The placental souffle was heard low on the left side. The fetal heart sounds were heard faintly over the lower left quadrant. Vaginal examination revealed the cervix of a multipara, with os too small to admit the tip of finger. The patient continued in good health, helping in the work of the ward.

On June 20, while walking across the floor, there was a sudden gush of blood from the vagina. I found her within a half hour of this time, propped up on the delivery bed, seriously dyspneic and cyanosed, no further bleeding having occurred. Auscultation of the chest gave moist, bubbling râles on both sides, extending up to the midscapular region. The heart action was extremely rapid, the heart sounds undistinguishable.

While preparations were being made to bleed to relieve the heart, an attempt was made to rupture the membranes. This brought on an uncontrollable rush of blood and, before a foot could be brought down, the patient was dead.

When the placenta was delivered it proved to be a central placenta previa, with the opening through which the child came exactly in the centre.

Did this patient die of heart clot, of pulmonary embolism, or of acute dilatation of the heart due to hemorrhage?

In 1905 I reviewed the literature for cases of sudden death following labor or operation. From this list and from later literature I have constructed a table of thirty-seven cases of proven or suspected pulmonary embolism. I am indebted to Dr. Edw. P. Davis for the privilege of using the previous list and for much of the literature of the present day.

*Read before the Jefferson Hospital Clinical Society, January, 28, 1911.

Pulmonary circulatory obstruction is of several types: thrombosis, which may be primary, or secondary to heart clot; and embolism, which is, as the name indicates, secondary. Thrombosis and embolism (not confined to the pulmonary tract) occur in from 1 to 3 per cent. of cases, including both postoperative and obstetric. Obstruction of the pulmonary circulation alone occurs in a very much smaller percentage of cases.

Embolism of the pulmonary artery is invariably fatal. When involving the smaller bloodvessels in the lungs it may produce atelectasis, infarct, abscess, or gangrene, and the patient may recover.

It may be true that pregnant patients are more likely to develop embolism, for the increase in the fibrin element in the blood normally existent as a protective measure, may prove to be a predisposing cause of thrombosis (and consequent embolism) when combined with other predisposing or exciting conditions.

Three conditions seem to be necessary to produce coagulation in living vessels: 1. Alteration of the composition of the blood. 2. Alteration in the vascular wall. 3. Slowing of the current. There may be many accessory conditions. The fibrin ferment necessary to produce coagulation may arise from a degenerative condition either in the endothelium of the vascular wall or the cellular elements of the blood; in the latter instance through what are known as blood plates.

We can then enumerate as pathological conditions influencing coagulation, the following: Pre-existing varices or thrombosis; toxemia or infections—under this heading we include infection of the endometrium and broad ligament veins, and particularly bronchial infections; profound mental depression; placenta previa, or other condition producing excessive hemorrhage; mechanical pressure, from the weight of the uterus; slowing of the heart action.

A careful study of the cases reported leads to the conclusion that the age of the greatest number of those dying is parallel with the age of the greatest number of deliveries. Cases are evenly divided between primiparæ and multiparæ. They occurred as follows:

During labor.....	7
During the first hour after labor.....	9
During the first day after labor.....	5
During the first week after labor.....	5

During the second week after labor	12
In primiparæ.....	15
In multiparæ.....	17
From ten to twenty years	1
From twenty to thirty years	11
From thirty to forty years	13
After forty years	5

Death may occur at any time from the beginning of pregnancy to the eighteenth day of the puerperium. There is no particular operation or manipulation in obstetrics or surgery especially responsible for the condition. From the beginning of symptoms to the time of death may be anywhere from two minutes to twelve hours; usually the end comes within half an hour.

Dyspnea and precordial distress, with labored heart action, are the most prominent symptoms. There is cessation of the breathing before the heart stops.

Of the cases coming under my observation, the two suspected as primary died before any operative measures could have relieved.

In those in which the symptoms are less acute, the embolus being secondary to a distant thrombosis, the question of surgical intervention might arise, though it is an open question whether any relief could be given.

4005 CHESTNUT STREET.

FIBROID TUMORS OF THE UTERUS COMPLICATING PREGNANCY, LABOR, AND THE PUERPERIUM.*

BY

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WHILE the association of fibroids of the uterus with pregnancy is comparatively rare, yet the fact that the growths may cause abortion, predispose to hemorrhage and infection, seriously embarrass the abdominal organs by pressure, become incarcerated in the pelvis, undergo necrosis and expose the patient to other complications and sequelæ, emphasizes the importance of a careful examination during pregnancy, in order that the dual condition may be recognized and such measures instituted as may be necessary for the safety of the mother and child.

The tumor may be solitary and uniform, but as a rule multiple growths are present, and they vary in size from a pea

*Read before the Medical Society of the District of Columbia, January 25, 1911.

to large proportions and are designated as subperitoneal, interstitial, or submucous according to their situation. Several varieties frequently co-exist, particularly the two latter.

Frequency.—Pinard (AMER. JOUR. OBST., 1902), in over 12,000 cases of fibroids, established the association of pregnancy in only .05 per cent. Mann (AMER. JOUR. OBST. AND DISEASES OF WOMEN AND CHILDREN, 1907, 15, 737), in a review of the literature covering a period of five years found seventy authors who had reported 150 cases and who had collected about 500 cases from other sources. Noble (*Jour. Am. Med. Assn.*, 1906, 47, 1736), in a collection of 2274 cases, of uterine fibroid, found only nineteen associated with pregnancy, in six of which, the pregnancy was ectopic. Carstens (AMER. JOUR. OBST., N. Y., 1909, 59, 447-462) reported a short history of all the recorded cases of fibroid tumors of the uterus complicating pregnancy, operated upon up to January 1, 1908. The number of cases tabulated is 516 and of these 498 were subjected to various abdominal operations.

There were 117 at or near full term and 381 of less than seven months' gestation. Of the cases subjected to Cesarean section or Porro operation at term, ninety-nine recovered and eighteen died; of the myomectomies 137 recovered and thirteen died; of the abdominal hysterectomies 185 recovered and nineteen died. In twenty-seven the result is not stated.

The reasons advanced to explain the infrequent association of pregnancy and fibroids are largely speculative, but the fact that a great majority of the cases occur in nulliparous women, many of whom suffer with endometritis, is significant.

Pinard quotes Bayle "the uterus that has not undergone the changes incident to pregnancy is more apt to be the seat of fibroids than one which has been many times stretched with the products of conception."

It is generally observed that primiparæ over thirty years are more likely to be the subjects of fibroids than in earlier years. In the negro, however, in which uterine fibroids preponderate, these growths are not infrequent in early womanhood. Stone, I. S. (AMER. JOUR. OBST. AND DISEASES OF WOMEN AND CHILDREN, 1910, 42, 401), in a report of 160 abdominal hysterectomies for fibroids, cites twenty-two cases under thirty years of age and nineteen, or over 85 per cent., in women of the negro race.

Mann believes that sterility stands in relation of the cause rather than effect. He says that the uterus has implanted in it the power of growth when the natural stimulus, an impregnated

ovum, is fixed in its lining membrane. If the stimulus fails, this natural tendency is manifested by irregular growths, involving some or all of its constituent elements, resulting in myomas, fibromas, or mixed tumors.

The writer believes that the fibroids cause the relative sterility, that the growths are congenital, and are aroused into activity after puberty, possibly by the pre-menstrual hyperemia of the uterus.

Clinical History.—The clinical manifestations will depend upon the size of the tumor, its situation, complications, and sequelæ. More than seventy-five per cent. of the fibroids of the uterus are located in the upper segment and in many instances, owing to the absence of subjective symptoms and neglect to make a careful examination during pregnancy, the growth is not discovered until labor or the puerperium, if at all.

Pregnancy exerts a marked effect upon the tumor because of the increased blood supply to the pelvic organs during this state. The increase in size of the tumor is due primarily to hyperemia and serous infiltration, and secondarily, to hyperplasia and hypertrophy of its constituent elements. After pregnancy the tumor undergoes involution because of the reduction of the blood supply, fatty degeneration, resorption of the transuded serum, thrombosis of the capillaries, and compression of the large vessels. The regressive change may be so great as to be easily mistaken for actual disappearance. The writer doubts, however, that the tumor ever disappears by absorption as is claimed by some authorities, but believes the disappearance is due to sloughing or extrusion. Pedunculated subserous tumors may sever their connection with the uterus and become attached to the neighboring organs.

With the increase in the growth of the fibroid there is a diminution in its consistency, the softening usually taking place gradually, but sometimes it is rapid, the tumor attaining five or six times its original size within a short period. This change is salutary, as it permits of moulding and shifting of the tumor, so that it more easily adapts itself to its environment. Rarely, because of adhesions to the surrounding structures, or impaction in the pelvis, the tumor in endeavoring to release itself may cause rupture of a blood-vessel, or, by pressure, produce inflammatory changes which may eventuate in degeneration and even necrosis.

Pregnancy predisposes to various degenerative changes in

the fibroid and according to Winter it is of the red variety in 53 per cent. of the cases, while Fairborn estimated it at 40 per cent. during gestation, and another 40 per cent. had borne children. When rapid degeneration occurs it is usually attended with pain, loss of flesh, sallow complexion, and decrease of all bodily functions.

Most of the fibroids have no influence upon pregnancy. The principal accidents occurring during this period are abortion, pain, hemorrhage, placenta previa, degeneration of the tumor, twisted pedicle, and incarceration in the pelvis.

Abortion is scarcely more frequent in pregnancy associated with fibroids than without them, because of the relative sterility of the former, but it is of more serious import, as the tumor increases the chances of hemorrhage and infection.

Hemorrhage apart from abortion rarely occurs during pregnancy unless placenta previa complicates the situation. Ectopic pregnancy, as noted by Noble, is of sufficiently frequent occurrence to warrant respectful consideration. Of all the clinical factors, however, *pain* is second to none in importance and significance. It may be due to abortion, diseased appendages, twisted pedicle, rapid growth, degeneration or incarceration of the tumor in the pelvis, pressure upon the abdominal viscera, peritonitis, etc.

The complications likely to be encountered in labor are abnormal positions and presentations, prolapsed cord, inertia, obstructed delivery, extrusion of a polypus, postpartum hemorrhage, rupture of the uterus, and adherent placenta. According to Olhausen, breech and transverse presentations are increased 24 and 19 per cent. respectively.

Although the pregnancy and labor may have been successfully terminated, the puerperium may be endangered by secondary hemorrhage and infection, on account of sloughing submucous fibroids, faulty uterine action, and incomplete drainage. Small, disseminated sloughing, interstitial and submucous fibroids are the cause of some of the obscure cases of infection that occur despite careful technic.

The writer has seen eight cases of fibroids complicating pregnancy, labor, and the puerperium. Two occurred at the Columbia Hospital, this city, when he was resident physician (1888-1890); four were private patients and two were seen in consultation. Six were under thirty years, the youngest was seventeen (colored) and the oldest thirty-four. Six were primiparæ and two were

multiparæ. Labor was natural in four; salpingoophorectomy was done in one; Porro operation performed in another, and forceps applied in two cases. Postpartum hemorrhage occurred in two cases and infection complicated the puerperium in two cases. One of the mothers died. Four of the infants lived, three were still-born, and in one case abortion (three months) occurred.

In connection with this series is reported a case of myomec-tomy performed in a nullipara who has since had four natural births.

CASE I.—*Multiple Interstitial Fibroids of the Uterus*.—M. H., colored, age thirty-four; multipara, one child four years old. Admitted to the Columbia Hospital May 24, 1889. Examination: abdomen very large; fundus uteri reaches nearly to the ensiform cartilage. Fetal heart not heard. Delivered June 7, 11.30 A. M.; birth natural, L. O. A. Child dead. Expulsion of the child was accompanied by a gush of about 3 pints of bloody fluid followed immediately by the placenta. With the completion of the labor, the patient collapsed and in spite of vigorous stimulation, expired two hours later. There was no marked external bleeding after the expulsion of the placenta.

Autopsy performed by Dr. W. P. Carr, fifteen hours after death. Body well nourished. Rigor mortis marked. Abdominal walls thin and flabby showing outline of the uterus, which can be distinctly felt as a firm elastic and undilated tumor extending a little above the umbilicus. Abdominal cavity contains about a half gallon of bloody fluid. The fundus uteri extends above the umbilicus, is mottled with slate-color, white, dark purple, and bright red spots, and is studded with white and bloody nodules, varying in size from a pin head to a walnut. It has a raw appearance in spots, as if devoid of epithelium, and blood is oozing from nearly the whole peritoneal surface. Upon removing the uterus, its wall was found to be about 2 inches thick, composed mainly of fibrous nodules, while the proper muscular structure of the organ is dark red, nearly black in places, soft and infiltrated with blood that oozes from its uncut surface. The cervix is so soft and mushy as to resemble a blood clot. Evidently more than a quart of blood had oozed from the surface of the uterus into the peritoneal cavity. The ovaries are atrophied and not more than $1/5$ inch thick. Right tube swollen to size of thumb, infiltrated with serum and of jelly consistency. Left tube normal in size but dark red in color. The round ligament is soft and friable. The broad ligaments and all the pelvic tissues are infiltrated with serum.

Kidneys have some fatty striæ in the pyramids.

Thoracic cavity: The lungs are gray and abundantly mottled with black pigment. The pericardium contains $1/2$ pint of greenish, yellowish serum. The heart is covered with yellowish fat and nearly one-third larger than normal. Both ventricles

are flabby and dilated. The auro-ventricular openings are enlarged so that the valves are insufficient. The wall of the left ventricle is apparently normal. The wall of the right ventricle is of uniform color, presenting no appearance of muscular tissue and composed apparently of fat and is only $1\frac{1}{4}$ inch thick.

The cause of death was from loss of blood from the diseased uterus both from the cavity and from its peritoneal surface, a much smaller amount of hemorrhage sufficing to cause death than if the heart had been normal.

CASE II.—*Interstitial Fibroid of the Right Cornu of the Uterus.*—L., age seventeen, colored; primipara. Confined June 11, 1889. Labor and puerperium normal. After delivery a tumor about the size of a large orange was detected in the right cornu of the uterus. Subsequent history unknown.

CASE III.—*Multiple Subperitoneal Fibroids of the Upper Segment of the Uterus.*—M., white, age twenty-five; primipara. Delivered May 15, 1892. Labor and puerperium normal. At the time of labor two tumors each about the size of a small cocoanut were felt in the anterior wall of the body of the uterus. The patient was advised to have the tumors removed before risking another pregnancy. The advice was not heeded but she bore the second child without any untoward event. The fibroids were successfully removed after the second birth.

CASE IV.—*Interstitial Fibroid of the Uterus.*—M. J., white, aged thirty; ii-para. Delivered October 15, 1891. Labor easy; scant postpartum hemorrhage. Puerperium complicated with phlebitis. The tumor, about the size of an egg, in anterior wall was detected during the manipulation to check the hemorrhage. When a bimanual examination was made several months later the tumor could scarcely be felt.

CASE V.—*Subperitoneal Fibroids of the Body of the Uterus and Ovarian Cyst.*—M. X., white, age twenty eight; primipara. Ovarian cyst removed by Dr. J. Taber Johnson, May 15, 1899. There were several small subserous fibroids in the anterior upper segment of the uterus which were not removed. The patient was confined August 15, 1900. Labor and puerperium normal. The fibroids were not appreciably influenced by the pregnancy.

CASE VI.—*Myoma Uteri.*—M. B., white, age twenty-five; iii-para. Protracted bleeding lasting over six weeks. Pain in both iliac regions. Examination revealed a symmetrical tumor of the uterus about the size of four months' pregnancy. Double salpingo-oophorectomy was performed by Dr. I. S. Stone, Dec. 6, 1899. On the third day after the operation the remains of an incomplete abortion (three months?) were expelled. Pregnancy had not been suspected. Recovery uneventful.

CASE VII.—*Interstitial Fibroid of the Lower Segment of the Uterus.*—M. G., white, age thirty-four; primipara, married ten years. Consulted Dr. Stone for the relief of pain in the abdomen. Examination revealed an eight months' pregnancy and a large

fibroid situated in the anterior lower segment of the uterus making delivery *per vias naturales* impossible. A Porro operation was elected to be performed at term, but several days later the patient reported that the fetal movements had ceased. As examination showed absence of fetal heart sounds, hysterectomy was performed July 6, 1905. Child dead. Mother made excellent recovery.

CASE VIII.—*Interstitial Fibroid of the Uterus, Posterior Wall, Inferior Segment.*—Mrs. D., white, age twenty-six; primipara. Seen in consultation with Dr. Thomas Lowe, who furnished the following history: Family, present and menstrual history negative. Examination at seven months' gestation revealed a cephalic presentation, R. O. A. External conjugate 19 cm.; other diameters about normal. Eighth month: Patient said she thought the baby had turned. Examination showed a breech presentation. External version was performed and the head was noted to be high up and resting in the iliac fossa. It was necessary to do a version several times before the head presentation would remain. Labor began December 14, 1909, 4 P. M. Examination showed the head resting on the brim of the pelvis, right iliac fossa. Membranes ruptured spontaneously with the first pain. Child living. Ten P. M., cervix admits one finger. Six A. M. (December 15) fetal heart rapid and irregular. At 11 A. M. Dr. Moran saw the patient for the first time. The fetal heart could not be heard and the child was thought to be dead. Patient was suffering great pain and making slow progress. Morphia sulph., $\frac{1}{4}$ grain, was administered and the patient placed on her right side to promote engagement of the head.

December 16, 4 A. M., Dr. Lowe applied the forceps at the brim. Delivery was moderately difficult and without rotation of the head. Child was dead. Six A. M., patient suffering severe pain and had an attack of syncope. There was extreme tenderness over the right iliac region, necessitating the application of an ice-bag. Temperature 99, pulse 96. Eleven A. M., consultation with Dr. Moran. Temperature 100, pulse 104. Abdomen distended and very painful on pressure. Two P. M., vomited dark brown fluid. Ileus diagnosed. Stomach lavaged, eserine, $\frac{1}{4}$ grain, administered and purgative enema given every four hours. December 17, fundus uteri on level with the umbilicus. General condition unchanged. Lochimetria suspected. Cervical canal opened and more than a pint of foul-smelling fluid was discharged. Examination disclosed a mass in the posterior wall and one on each side of the uterus. Culture taken from the uterine cavity was found to be negative. Uterine irrigations given when necessary. Patient's condition gradually improved and she left the hospital three weeks after confinement.

In June, 1910, she had an attack of pelvic peritonitis, lasting two weeks, temperature ranged 102 to 103°. Previous advice for removal of the fibroid was again urged.

September 22, 1910, laparotomy was performed by Dr. I. S.

Stone. Pelvic peritonitis and universal adhesions present. Uterus enlarged and adherent to the intestines. In lifting up the uterus from the pelvis, the mass sac in the posterior wall ruptured with escape of dirty white purulent liquid. Both appendages markedly adherent and showed signs of recent inflammation. The appendix was adherent to the right broad ligament and greatly congested. Panhysterectomy and appendectomy performed. Section of the uterus showed a circumscribed cavity about the size of a cocoanut containing a collection of white fluid. In the cavity was a sloughing fibroid about the size of an orange. Patient made a good recovery.

When the writer examined the case after delivery and found what was taken to be a tri-lobed fibroid of the uterus he felt greatly chagrined that the condition was overlooked when he saw the patient in labor. It was clearly demonstrated at the operation, however, that the low situation of the tumor in the posterior wall of the uterus prevented earlier detection. If the true condition could have been discovered during pregnancy, myomectomy would have saved the child and with little added danger to the mother. As it was, however, she suffered serious complications and sequelæ that necessitated the removal of the uterus and her life was only saved by the vigilant care of her physician.

Multiple Fibroid of the Non-pregnant Uterus.—Mrs. S., white, age (?), nullipara. Is anxious to become pregnant. Examination revealed three subserous tumors in the anterior wall of the uterus, varying in size from an egg to an orange. Myomectomy was performed by Dr. I. S. Stone, May, 1900. Patient has since given birth to four children. Labors normal.

While the diagnosis of uncomplicated fibroma uteri is comparatively easy, the coexistence of pregnancy is often difficult to determine particularly in the early months. Slight or profuse metrorrhagia, set up by the presence of the tumor, may mask the existence of the pregnancy and be mistaken for the menstrual flow. This happened in Case V herein reported. The patient gave a history of protracted bleeding and examination revealed a small myoma uteri. Salpingoophorectomy was performed and on the third day after the operation the remains of an incomplete abortion were expelled. Many cases are on record where experienced operators have opened the abdomen and removed the uterus without having previously recognized the existing pregnancy, and, on the other hand, pregnancy with painless bleeding in the early months has not infrequently been taken for myoma uteri. Subperitoneal fibroids are often overlooked or mistaken for fetal parts, and, conversely, the densely and unequally contracted coru of the uterus may be taken for a fibroid

tumor. In this latter event the intermittent disappearance of the mass will clear up the situation. Ballottement may be simulated by a movable subperitoneal fibroid, and pressure of a tumor on the uterine artery may produce a bruit. Growths situated in the posterior wall of the uterus may be overlooked during pregnancy, and small scattered fibroids also readily escape detection.

We see, therefore, since several of the signs of pregnancy may be mimicked by uterine fibroids that it often requires repeated examinations before a positive diagnosis can be established.

Prognosis.—The prognosis depends greatly upon the location of the fibroid, complications, sequelæ and management. Tumors of the upper segment of the uterus are rarely dangerous because there is little likelihood of pelvic pressure and obstructed labor. When they involve the lower segment or cervix they may form an insuperable obstacle to vaginal delivery and require abdominal operation. Even though the tumor may not obstruct the canal to such a degree as to prevent the birth of the child, nevertheless it influences deleteriously the position of the child and, besides, compression of the growth by the presenting part may cause necrosis and subsequent sloughing. Interstitial and submucous growths, by interfering with the proper nutrition of the ovum, may produced abortion in the early months, and during labor, by preventing effectual closure of the uterine sinuses, cause postpartum hemorrhage, and their encroachment upon the cavity of the uterus may lead to retention of the lochia and infection.

Fibroids in general may rapidly increase in size or undergo degeneration. This uncertain factor creates much responsibility for the physician and operator in estimating the degree of danger and in deciding when an operation may be necessary in order to save the patient.

Delayed Cesarean section, injudicious application of forceps, and badly selected cases of version have an exceedingly high mortality. In twenty-eight cases of delayed Cesarean section quoted by Pozzi from Cozin, twenty-four died, and only fifteen infants were extracted live. (Quoted from Hewston, J. T., *Birmingham Med. Review*, 1908, lxiv, 53-75.) Sanger (*ibid.*) at a later date collected forty-three cases of delayed Cesarean section with thirty-six deaths, a mortality of 83.7 per cent.

Susserott (*ibid.*) collected 147 cases, in twenty of which forceps were applied with eight maternal and thirteen fetal deaths;

Nauss a series of 241 cases, in nineteen of which forceps were used and five mothers died.

Lefour (*ibid.*) states that in thirty-five cases of version in fibroids complicating labor, twenty-one mothers and twenty-five infants perished. Susserott found in his series twenty cases of version, giving a maternal mortality of twelve, and seventeen infants were lost, while in twenty-six cases of version collected by Nauss twenty succumbed.

Susserott found in twenty-one cases of adherent placenta necessitating removal that there were thirteen maternal deaths.

Such appalling results, although not of recent date, yet show the necessity of a careful study of such cases so that the various complications and sequelæ may be forestalled by a well defined plan of procedure.

It is impossible to estimate accurately the general mortality and morbidity for the want of reliable statistics. Carsten's report of cases of fibroid tumors complicating pregnancy operated gives a mortality of about 10 per cent.

Treatment.—The treatment of fibroids associated with pregnancy is expectant and operative. If the pregnancy is normal no special treatment is required. Twisted pedicle, irreducible impacted tumors, rapidly growing and necrotic tumors, which menace the life of the patient, should be promptly dealt with by abdominal section. Ectopic pregnancy and placenta previa should be treated by immediate intervention.

Absorption, which is often incomplete, is the most frequent accident occurring during pregnancy complicated with fibroids and demands prompt and thorough cleansing of the uterus to prevent hemorrhage and infection. Artificial abortion and induced premature labor are beset with the same dangers as spontaneous abortion, and are, therefore, unjustifiable as therapeutic measures. While the expulsion of the fetus is relatively easy, it is not so with the secundines; the placenta is often adherent in part or whole and its extraction is difficult and sometimes impossible because of encroachment of the tumor upon the cavity of the uterus. Even after the production of the abortion, it may be necessary to remove the uterus to save the patient. The interruption of the pregnancy, therefore, unnecessarily sacrifices the life of the child and often that of the mother.

If the tumor becomes impacted in the pelvis an attempt should be made to release it by placing the patient in the knee-chest posture or in the Trendelenburg position and then using the

gentlest manipulation. If it is impossible to reduce the impaction by this means, resort must be had to surgery.

Unless the tumor endangers life, operation during pregnancy is to be discountenanced, as it may precipitate labor and give additional risk to saving the child. An exception to this rule, however, is in tumors of the cervix and uterine polypi, because of the danger of obstruction during labor, subsequent sloughing of the growth, and infection. It is better, therefore, to remove them before the advent of delivery.

Should surgical intervention become imperative, myomyectomy, Cesarean section, and hysterectomy are the available operations. Myomectomy should be the operation of election, when feasible, in women during the childbearing period, and if necessary this can be supplemented by Cesarean section. Hysterectomy should be reserved for those cases where enucleation of the fibroid is not practicable, because of its size or necrosis, and in advanced life, when there is no likelihood of a subsequent pregnancy.

Salpingo-oophorectomy, which was recommended and practised some years ago for the purpose of preventing the further growth of the fibroid, has been wisely abandoned. It was seen that many of these tumors continued to grow after the removal of the ovaries, and, besides, the production of premature menopause often had a most disastrous effect upon the patient. While the ovaries may undergo cystic degeneration after hysterectomy for fibroids, the writer is in accord with those who favor preserving the function of ovulation as long as possible, even at the risk of doing a subsequent operation. The unfortunate result of oophorectomy for fibroids is strikingly emphasized in case number 6. This patient suffered greatly on account of the induced menopause, and she charges the operation with having wrecked her married life.

Rarely pain is so severe as to necessitate operation, particularly if the patient's life is endangered by an unrelieved twisted pedicle, degeneration of the tumor, tubal or uterine abortion, etc.

It is at times far from easy to decide upon the proper line of action in this complication during pregnancy, but it is exceedingly more difficult to determine the right course to pursue during labor when intervention becomes necessary. Usually, however, in pregnancy there is time for study and observation of the case and the adoption of an elective method of procedure, whereas, during labor, prompt decision and immediate action may be necessary. The method of election should, therefore, be one that

gives the best chance for the continuation of the pregnancy and that will produce the least traumatism during delivery.

If the growth is in the upper segment of the uterus, the labor is likely to be normal unless the action of the uterus is crippled by the size or number of the tumors. In this event the careful use of forceps will facilitate the delivery. While the child may be safely delivered, the placenta may be retained or be adherent and require to be dealt with in the manner related in speaking of the management of abortion and premature labor. When the tumor is in the lower segment or cervix, extraction with forceps or by version are extremely dangerous procedures, and rarely, if ever, justifiable until after the head has passed the obstruction. The dragging of the head through the birth canal under these conditions may cause rupture of the uterus and by compression of the tumor lead to its sloughing with inevitable infection. These cases belong clearly to the domain of surgery, and Cesarean section with subsequent myomectomy or hysterectomy, according to the exigencies of the case, is the rational method of intervention.

Morbidity of the puerperium must be guarded against by a rigorous aseptic technic during and after delivery and by securing complete uterine drainage. Should infection occur the treatment will depend upon whether it is putrid or pathogenic. In the former intrauterine irrigations are indicated, and in the latter the chief reliance must be on supportive measures, unless the patient's life is in peril, then more radical means will have to be invoked.

Curettage after abortion is an exceedingly dangerous and unsatisfactory procedure, because it is practically impossible to remove the pathological debris completely.

CONCLUSIONS.

1. The study of the literature of fibroids complicating pregnancy, labor and the puerperium, shows that much of the morbidity and mortality was due to the failure to recognize the existence of the growths in time for elective intervention, to faulty technic, or an unsuitable operation.

2. Seventy-five per cent. of the fibroids are located in the upper segment, are frequently overlooked, and rarely cause serious difficulty during pregnancy and labor, but tumors of the lower segment frequently give rise to complications and sequelæ that can only be successfully cared for by surgery.

3. Hysterectomy for fibroids during pregnancy compares favorably with the same operation in fibroids without pregnancy. Myomectomy, on the other hand, gives greater mortality in the former because of the added danger of abortion and the increased chances of hemorrhage and infection.

4. Myomectomy should be the operation of election, when feasible, during the child-bearing period and hysterectomy reserved for the cases nearing the menopause and when pregnancy is inadvisable.

5. Extraction of the child with forceps or by version when the tumor is situated in the lower segment is extremely hazardous and attended with a very high death rate.

6. Artificial abortion and induced premature labor are unwarranted because they do not improve the chances of the mother and unnecessarily sacrifice the life of the child.

7. Curettage, postabortum and postpartum, is an irrational operation for this complication because the irregularity of the uterine cavity makes thorough removal of the pathological débris practically impossible.

8. Since pregnancy predisposes to the degeneration of the fibroid, even though the patient was safely delivered without an operation, the tumor should be removed as soon after birth as it is expedient to do so.

9. The evolution of the operative treatment of fibroid tumors of the uterus forms one of the most brilliant chapters in the history of abdominal surgery. The mortality during the past two decades has steadily decreased from more than 30 per cent. to less than 10 per cent., and many surgeons have attained as low as 3 to 5 per cent.

While the last word has not been said regarding the management of fibroids complicating pregnancy, labor and the puerperium, it, too, has shared the benefit of the improved technic, and with the more careful supervision of pregnancy, early detection of the complication and the more timely intervention, in vogue in recent years, the morbidity and mortality have been markedly reduced.

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THE PRESENT STATUS OF THE MIDWIFE.

BY

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I HAVE been asked to present to you a discussion of the present status of the midwife in this country. This involves the consideration of two phases of the question, the extent to which the midwife practises in the United States, and her fitness to discharge the duties which she assumes.

Regarding the extent to which she practises, it is a conservative estimate that 50 per cent. of the births in the United States are attended by midwives. In New York, during the last six years, midwives have reported over 42 per cent. of all births; in Buffalo 50 per cent. of the births are reported by midwives; in St. Louis, midwives preside at 75 per cent. of the births; while in Chicago, the report for one year reached as high as 86 per cent. Similar reports are made by one city after another.

We know in general that the midwife is commonly employed in this country by the negro and alien populations as well as by many native-born of foreign parentage, and when we consider that one-third of the total population of the United States, according to the last census, is made up of aliens and negroes, we get a fair idea of the magnitude of the problem which confronts us.

The custom among the foreign-born population of employing midwives is a deeply rooted, world-old tradition; moreover, the midwife is an economic necessity to those whom she attends, for in most instances the patient is able to secure from her both medical attention and nursing care at a cost which seldom exceeds a doctor's fee for medical attention alone. The midwife acts not only as visiting nurse but as general advisor and woman friend at the period which is fraught with so much anxiety and terror. She frequently prepares the meals, and gives aid in a variety of forms which an attending physician could not and would not attempt to offer. Considering the service which the midwife renders her patient and the limitless field for practice afforded the midwife, one can readily understand the tenacity with which they cling to each other. Thus, for traditional

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and economic reasons, the services of the midwife will continue to be demanded by our foreign poor, since the influx of foreigners to our shores is constant, and there will always be women who will respond to such calls. The midwife's existence may be ignored, but she cannot be eliminated.

The practice of midwifery is by no means a local question, but, as has been suggested, is a custom which has insidiously and with deadly persistence grown in this country until we find it to-day forming a part of the very warp and woof of the fabric of our greatest social problems.

Reports upon midwifery investigations made in several of our large cities, together with observations from those who confront the problem in the rural districts, prove conclusively that the midwife, with very few exceptions the country over, is dirty, ignorant, and totally unfit to discharge the duties which she assumes. And these women attend approximately 50 per cent. of the births in this country, usually without supervision or control. So far as I have been able to discover, the United States of America is the only civilized country in the world in which the health as well as the life and future well-being of mothers and infants is not safeguarded so far as is possible through the training and control of midwives. In other countries this is made a national question, since the conservation of health as well as life is felt to be a matter of national importance.

The utter indifference and ignorance concerning the status of midwives in this country, on the part of those who should be responsible, is disclosed by an attempt to study state laws affecting various aspects of the problem as a whole. Everywhere there is evidenced the same deplorable lack of provision for their control and for their adequate training. Excepting in a very few localities any woman may follow the profession of midwifery unsupervised and unrestricted, no matter how deficient she may be in education, training, and experience. In thirty-three of the forty-eight states and territories, there is no law restraining the practice of midwifery; in two, Georgia and Alabama, midwives are actually allowed by law to practice unrestricted, while in the remaining thirteen states there are laws purporting to require examination before licensure to practise.

Some extracts from these laws indicate how nearly useless they are as measures to regulate and control midwives in their practice.

The law of Maine says: "This act shall not apply to midwives, who lay no claim to the title of physician or doctor," and the law of Mississippi reads: "Females engaged in the practice of midwifery are not prohibited from such practice, but are entitled to engage therein without a license."

The Medical Law of Louisiana terminates a section relating to midwifery by saying, "This Section does not apply to the so-called midwife of rural districts and plantation practice who, in the sense of this act, are not considered as practising midwifery as a profession."

In the midwifery law of Missouri, the section on licensure terminates: "Nothing in this section shall be so construed as to require women practising midwifery to obtain a license when said women do not practice midwifery as a profession, and do not make any charge for their services."

In one state the Commissioner of Health was evidently not aware of a state law requiring midwives to report ophthalmia neonatorum, copies of which were being distributed to very good purpose in a large city of his state. In Massachusetts, where midwives are not legally recognized, they reported 5,910 births in 1910, probably attending a great many more, since one-third of the population of that State is foreign-born. In North Dakota, where also the midwife is not recognized by law, more than one-third of the population is made up of aliens.

In taking a closer view of the midwife problem, we find that at least some vigorous effort has been made to raise the standard in New York State, but we are impressed at the same time with the dire need of further vigorous and more widespread effort.

There are in this state three county laws, applying to Erie, Chatauqua, and Niagara Counties, and two city laws applying to Rochester and New York.

In New York City, an old provision of the Sanitary Code of the Department of Health had required midwives to register at the Board of Health. The enactment of the State Midwifery law of June 6, 1907, empowering the City of New York to adopt rules and regulations and adopt ordinances governing the practice of midwifery within its precinct, was a great step in advance. Under this law, in addition to registration, it is now required that registration shall be annual, that midwives shall be able to read and write, be of good moral character and clean person, and have attended twenty cases of labor under the supervision of a licensed and registered physician.

Details of equipment and restrictions of practice are also stipulated, and inspectors are employed to enforce these rules.

But the present condition of midwives in New York City demonstrates conclusively that these measures are inadequate to control the situation, and evidently represent but a beginning of the stupendous effort which will be required to solve the problem as a whole.

Comprehensive rules have been adopted by the Board of Health, and earnest effort is made to secure their enforcement, but the same absence in New York City of provision for adequate training which is evident in other parts of the country renders effective enforcement of the desired rules practically impossible.

The midwives in New York City are still ignorant and incompetent women as a class, and no amount of supervision will make them otherwise. They are reporting about 43 per cent. of the births annually, while it is impossible to estimate the extent of their illegitimate practise. During 1910, 975 permits to practise were issued to midwives, and it is safe to estimate that for each midwife registered there is one practising who is not registered. It has not even been possible to require that those midwives registered shall be able to read and write, and many are obliged to make a mark in place of their signature.

An idea of present conditions can be gathered from the following extracts from the report of 1910 of the Research Committee of the Committee of Fourteen, significantly entitled "A Study of Law Enforcement."

"A study of the records of the County Medical Society and of the Department of Health shows that from 1901 to 1909, inclusive, the County Medical Society (to which the Department refers all of its cases for prosecution) prosecuted fifty-nine midwives, of whom fifty were fined or imprisoned, three were discharged, and in six instances no record was obtainable of the disposition of the case. Of these fifty-nine midwives, twenty-three were granted permits, four were denied, one application was pending, and in thirty cases there was no record in the Department of Health.

"Eleven of the twenty-three midwives to whom permits were granted acknowledged in their applications that they had previously been arrested on criminal charges, the remainder declaring that they had never been arrested." * * *

"An investigation made by the Research Committee of

twenty-seven midwives who advertised as such in different foreign papers during May and June, 1909, showed that of this number twenty-three agreed to perform abortion and four refused, of whom two gave the addresses of other midwives who would consent. Of the twenty-seven midwives investigated the Board of Health had granted permits to seventeen, seven in 1908 and ten in 1909; one permit was denied, one application was pending, and in eight cases midwives were among those prosecuted by the County Medical Society, one in 1906 when she was fined \$100, and the other in 1907 when she was fined \$200, and again in 1908 when she served thirty days in prison. The first midwife was granted a permit on December 30, 1908. The name of the second does not appear on the records of the Health Department, though she has long been a notorious woman, and has ten beds in her house, six of which were occupied by short-time abortion cases at the time of the investigation."

"Two midwives advertising in foreign papers were visited. Upon investigation one was found in a kitchen which was filled with a foul odor and was indescribably dirty. The personal appearance of the midwife was in keeping with her surroundings. She was intoxicated and interspersed her conversation with oaths. She readily agreed to commit an abortion and declared that she had great ability in relieving young girls of their trouble in a short time. She told revolting stories of her practices and spoke of having had very young girls as patients. A further investigation brought out the fact that she had offered an honest midwife \$6 out of every \$25 she received from patients sent to her. In her application she declared that she had never been arrested on a criminal charge. This statement might have been true, as there was no record of prosecution against her under her present name, but she had acknowledged an arrest to a neighboring midwife. She might have given a fictitious name, which is commonly done. The Board of Health granted this midwife a permit on January 20, 1909." * * *

"Section 184 of the Sanitary Code of New York City provides that no person unless authorized by law to do so shall conduct a lying-in hospital, home, or place for the care of pregnant and parturient women, or *advertise, offer, or undertake* to receive and care for them at such place or at his home without a permit from the Board of Health.

"The permit issued by the Board of Health does not allow

midwives to take care of patients in their homes, but a special permit is required.

"During the months of May and June, 1909, sixty advertisements of midwives were counted in different foreign papers. Of the twenty-seven visited, seventeen advertised to take a patient in their homes or private sanitariums for treatment. Of the seventeen, the Department of Health had issued permits to practise as midwives to eight, in one case the application was pending, and in eight cases there was no record of them in the Department.

"One of the most flagrant cases was that of a midwife who maintained a private sanitarium on Staten Island. She advertised from a New York address near the down-town department stores and was at this place during the noon hour three days each week. She did not have a permit, nor is there any record of her name in the Department. Another midwife advertised under two different names. She had been granted a permit under one name, but there was no record of the other name in the Department."

"The new law providing for the inspection and regulation of midwives went into effect June 6, 1907. The records in the Corner's office in Manhattan from June 1, 1907 to March 31, 1909, show that there were seventy-two deaths from abortions during this period. During this period, 227 fetus remains were found in various parts of Manhattan and taken to the Morgue."

"Of twenty-seven midwives, investigated, ten gave the names of schools in New York City and six of foreign institutions from which they had received diplomas. In 1907 an inspection was made of one of the schools of midwifery. The method of instruction consisted of lectures followed by questions and discussions. The course extended over a period of three months, the total charge being \$66 in addition to \$2.50 for a book. At the end of the term of instruction the prospective midwife was given a diploma. At the time of the inspection the "Professor" stated that the Board of Health had always accepted the diplomas of this institution and that examinations were not necessary in the State of New York after the course was completed. When the diploma was received, all a graduate needed to do was to register at the Board of Health and start at once to practise. No instruments were necessary until graduation.

"Often graduates of one institution, nine have been convicted

of criminal practices, one was discharged, nine were granted permits by the Board of Health and one application was denied. This school was organized in 1883 and is still offering its course of instruction. The six graduates of the infirmary and maternity home have similar records. One was fined \$50 on a criminal charge, and five recently agreed to commit abortion. All have permits from the Board of Health. The one graduate from the other school of midwifery investigated was indicted by the Grand Jury for man-slaughter on March 30, 1909, but a permit was granted by the Board of Health, April 21, 1909."

I have quoted from this report for the sole purpose of demonstrating that the problem of the midwife has not been solved in New York City, that 1. The midwife as she practises to-day is a menace to the lives and health of a large percentage of the mothers and infants in the City and State of New York, for it must be borne in mind that the evil is state-wide. 2. The existing provisions for training and control are inadequate to meet the situation. 3. Provision for the thorough training as well as control of midwives is an urgent and imperative need. 4. The law empowering the Department of Health to regulate the practice of midwifery is the logical beginning, but will have to be strengthened by the establishment of schools for training. 5. The medical profession should support and uphold the effort which is being made to better the practice of midwifery, which has been so degraded in the hands of women acknowledged to be, for the most part, dirty, ignorant, and incompetent.

48 WEST FIFTY-NINTH STREET.

THE INFLUENCE OF THE MIDWIFE UPON INFANT AND MATERNAL MORBIDITY AND MORTALITY.*

BY

RALPH WALDO LOBENSTINE, M. D.,
New York.

THIS phase of the general midwife question under discussion to-night can, at best, only be treated on broad lines and figures can necessarily have but a relative value. You will readily agree with me, I feel sure, that it is only the severer types of morbidity that come into the hospitals, or that are reported to the Board of Health. The problem is an especially difficult one, if we are striving in all earnestness to deal with the midwife *honestly*, for the midwife is unavoidably linked to the physician who practises among the same class of individuals.

*Read before the New York Academy of Medicine, Feb. 23d, 1911

Moreover, much that is said to-night concerning the evil results of midwife practice here in New York, can be said—even to a higher degree—of the physician. The poorly trained physician does far more harm than the midwife, as is abundantly shown by the various hospital records as well as by the records of the Board of Health.

The figures, then, that I shall present to you must not be taken—all of them at least—as infallible; but they are, I believe, as reliable as can be gathered in this city to-day, and are entirely free from bias.

At the outset I would recall to your minds that the chief reason for so carefully inquiring into the midwife problem to-night is because of the fact that midwives take care of from 40 to 45 per cent. of the cases of obstetrics in the city of New York, and among the Italian population from 90 to 93 per cent.

I. *Infant Morbidity and Mortality*.—The general morbidity among the infants under the care of midwives is *not*, I believe, especially high. They receive good average care during the early days of life.

The midwife averages from nine to ten days of attendance, bathing and dressing the infant daily. She also indirectly promotes its welfare by her attentions to the mother, thus relieving the latter of responsibility and care, during the early days of the puerperium.

The *two* black marks that stand out, however, against the midwife in her influence upon the welfare of the child, are

1. The fact that she has been responsible for a vast amount of gonorrheal ophthalmia and its resulting blindness; and
2. The fact that she is so often responsible for the intrapartum death of the fetus.

About one-third of the totally blind in this country have lost their sight as the result of that dreadful scourge, gonorrheal ophthalmia. The responsibility is usually considered to be about equally divided between midwife and physician. In 1908, Dr. Darlington caused to be published the "Rules and Regulations Governing the Practice of Midwifery." In this set of regulations is a rule requiring the midwife to carry in her bag a 1 per cent. solution of silver nitrate, with full direction as to its use; and further requiring her to call in a physician, in case of swelling of the eye-lids or in the presence of a discharge.

If this rule can be adequately enforced, it will, of course, decrease rapidly the number of cases of blindness from "ophthalmia

neonatorum." In regard to the high number of still-births reported by midwives (20 to 23 per cent. of the total number), we must look for explanation to several causes.

Miss Crowell, in her extensive study of 500 midwives, found that three-fifths of the total number claimed that they would undertake abnormalities. This statement many of us know from actual experience to be true; although I, for one, do not believe that they persist long in their efforts at abnormal delivery, without calling on some physician for assistance. Partly, then, from their attempts at managing abnormalities; partly, too, from the fact, that they permit abnormally prolonged labors, and in part due to the faulty managing of some of the more common conditions, as "cord around the neck," etc., the percentage of still-births is bound to be high under the present system.

II. The *Question of Criminal Abortion*.—The most serious blot on the character of the midwife is the all too frequent charge laid at her door of performing criminal abortions. The number of abortions performed each year in this city is enormous. The midwives are said to be responsible for about one-third of the number. It is startling to see how readily these women undertake this operation. The advertisements of such midwives are still published and, according to Mrs. Wm. H. Baldwin, Jr., of the research committee, of the committee of fourteen, twenty-three out of twenty-seven who so advertised agreed to commit abortion.

According to Miss Crowell, twenty-nine out of the 500 midwives visited agreed to perform the operation and 119 others were suspicious.

III. *These considerations lead us now to the discussion of the maternal morbidity and mortality.* The dangers to the mother or mother-to-be are those dangers that result from *ignorance, filth, criminality*. All three are likely to cause sepsis in one form or another. In addition we find the evil consequences that result from the willingness of many midwives to undertake abnormalities, thus subjecting the patients to such additional risks, as from rupture of the uterus, hemorrhage, exhaustion from prolonged labor. Midwives are known to undertake "breech and twin deliveries," to handle "adherent placenta," to tampon the uterus; and, in one instance in our series, the midwife undertook the management of an "Inverted (total) uterus."

Many a case of placenta previa or accidental hemorrhage has been kept under their observation, without medical or hospital aid, until the patient was practically exsanguinated.

Despite these gloomy facts, however, we must admit, in justice to common-sense reasoning, that the majority of the women under the care of midwives pass through their hands without serious damage.

From a personal study of many hundreds of death reports at the New York Lying-In Hospital (this hospital delivers about one-eighth of the total number of cases of obstetries in the City of New York), as well as of a large number of histories, I find that, after sifting out all doubtful cases, the midwives have been apparently responsible for about 15 per cent. of our septic morbidity. Again, I find that in a series of 60,000 cases of obstetrics there were 208 deaths, due to the various types of sepsis. Of this number, sixty-five deaths seem to be directly traceable to midwives. In these cases, as far as could be learned, no doctor outside the hospital had any handling of the patients. This number, sixty-five, represents in the neighborhood of 31 per cent. of the total number of septic deaths that occurred in this institution during a period of about 10 years. Forty-nine of the 208 deaths were from criminal abortion, and 11 per cent. of them were treated by midwives, before their admission to the hospital wards. By reviewing, in the next* place, the figures (*q.v. infra*) of the Board of Health you will find 1, that the total number of deaths from puerperal sepsis in New York City is still very large; 2, that there has been practically no great improvement in the death-rate from puerperal sepsis during the last fifteen years; and 3, that from one-fourth to one-third of the septic cases had been under the care of midwives. (This last figure corresponds closely to what we found in the Lying-In Hospital statistics.)

STATISTICS OF NEW YORK CITY.*

<i>Death from Puerperal Sepsis.</i>	<i>Other Puerperal Diseases.</i>
1906.....263	500
1907.....322	461
1908.....262	436
1909.....250	469
1910.....255	506

*I wish to acknowledge my sincere thanks to Dr. J. J. Cronin, of the Board of Health, for his kind assistance, in procuring for me the statistics of the Board.

BOROUGH OF MANHATTAN.

<i>Death from Puerperal Sepsis.</i>		<i>Other Puerperal Diseases</i>	
1909		<i>Not Mentioned.</i>	
No. of cases.....	84		
midwife	22		
physician	60		
no attendant	2		
1910			
No. of cases.....	125		
midwife	39		
physician	74		
no attendant	12		

OLD CITY OF NEW YORK STATISTICS.

<i>Death from Puerperal Sepsis.</i>		<i>Other Puerperal Diseases.</i>	
1892.....	277		417
1893.....	237		384
1894.....	193		358

We see from this brief survey a condition of affairs that is startling. We find, too, that the midwife is apparently unavoidable, in such a community as this. We know that she is capable of much good; but we know also—and know it well—that she is responsible for a great deal of suffering, for a great many deaths. I tell you, friends, the picture is an unpleasant one, the sacrifice of human life unnecessarily high, and the results to the family needlessly cruel. Have you ever stopped to ask yourselves, when called to the bedside of one of these hopeless sufferers, “Why should such outrages take place to-day, in our midst?” The time has come, I say, for active measures in regard to this midwife question. *The longer the delay in facing this problem, the greater the shame upon our community.*

135 EAST 70th STREET.

THE REMEDY FOR THE MIDWIFE PROBLEM.*

BY

J. CLIFTON EDGAR, M. D.,

New York.

It would appear that the time is ripe for some concerted action toward the solution of the midwife problem in the United States.

An anomalous condition exists. On the one hand physicians and trained nurses in this country before they are allowed to enter upon their professions are required to receive instruction in the treatment and care of child-bearing women and new-born infants.

On the other hand from 40 to 50 per cent. of the births in the large cities of this country are attended by midwives who, except in some rare instances, are ignorant, untrained, incompetent women, and some of the results of their obstetric incompetence are unnecessary deaths and blindness of the infants, and avoidable invalidism, suffering and deaths of the mothers. Moreover, as we have learned this evening, except in isolated instances, no attempt has been made to eliminate the midwife or to regulate, supervise and control her work.

The consensus of opinion throughout this country points to the impossibility of entirely eliminating the midwife. This was recently brought out at the Second Annual Conference of the American Association for the Study and Prevention of Infant Mortality, held in Baltimore, November 10, 1910.

Since the evil cannot be eradicated, the dangers to the public must be minimized by some provision for the proper regulation, supervision and control of the midwife by the State and for her training to do her work in a cleanly and intelligent manner.

Much has been written, and more has been said in discussion, concerning the remedy for the abuses of midwife practice, but the gist of the matter is that one or two things must be done with the midwife—she must be eliminated or educated and placed under state control.

The countries of the old world have faced this problem and solved it.

Most of us are familiar with the training of the German

* Read before New York Academy of Medicine, Feb. 23d, 1911.

midwife, and it may not be generally known, as Miss Alice Gregory of the National Training School for Midwives in England has pointed out, that Holland, Belgium, France and Italy give a full two years' training to their midwives, and that Norway, Sweden and Denmark one year.

England faced this problem and solved it as late only as 1902, by the establishment of the Central Midwives Board by an Act of Parliament entitled "An Act to Secure the Better Training of Midwives and to Regulate their Practice."

Miss Carolyn C. Van Blarcom, executive secretary of the Committee on Prevention of Blindness of the New York Association for the Blind, has studied the English method and described it in a paper entitled "A Possible Solution of the Midwife Problem."

Provided state laws are forecoming for the control and education of the midwife: How shall the education of the midwife be accomplished?

Three sub-questions naturally suggest themselves:

1. What are the characteristics of the midwife at present in America?
2. What do they require to fit them to practice clean and safe obstetrics?
3. How are they to obtain this training?

1. *What are the Characteristics of Midwives at Present in America?*

Recent communications received from the health offices of thirty-one states of the Union, namely, Arizona, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Utah, Vermont, Virginia, West Virginia, show that the nationality of the midwife includes Germans, Austrians, Bohemians, Italians, Swedes, Poles, Russians, Hungarians, Slavs, Fins, Syrians, Mexicans and Negroes.

Miss Crowell's graphic accounts of the character of the midwife in New York City, in 1906, show that of the 500 midwives personally interviewed, less than 10 per cent. could be classified as capable, reliable midwives; the rest were hopelessly dirty, ignorant and incompetant. Over 90 per cent. in New York City hopelessly dirty, ignorant and incompetent. So much for their characteristics.

2. *What do Midwives Require to Fit Them to Practise Clean and Safe Obstetrics?*

They require a course of instruction, preferably prescribed by law, extending over a period of at least one year, ranking in comprehensiveness but not as regards time between that given in our best education institutions to medical students and pupil nurses, somewhat less than the former and more comprehensive than in the case of the latter.

The midwife to fit her for work requires thorough drill and instruction in the examination of pregnancy, including asepsis and cleanliness in its broadest sense (antefactum instruction); the care of labor cases (intrafactum instruction); and of mothers and child after confinement (postfactum).

There should be repeated drill in the physiology of these subjects, with at the same time a clear understanding of the borderline of the pathological.

3. *How are the Midwives to Obtain their Training?*

The maternity hospitals and the maternity wards of the general hospitals naturally suggest themselves.

But it must be borne in mind that most of the maternity wards in New York at least are at present taxed to their utmost in caring for the instruction of medical students, pupil nurses, graduate nurses, and, in some instances, as at Bellevue, affiliated nurses.

The introduction of another class of pupil workers would of necessity lead to confusion and friction, in determining the rank, precedence and duties of the midwife in the ward.

In some wards at least, the material is already barely sufficient for the demands made upon it.

Unless the state or the school for midwives shall demand some preliminary educational requirement before a midwife can register in a school for midwives, for some years at least we shall have to reckon with a class of pupil midwives, less than 10 per cent. of whom can be termed capable and reliable, the remaining 90 odd per cent. being hopelessly dirty, ignorant and incompetent.

Many of the foreign midwives have but a slight knowledge of English, and pupil midwives would include Slaves, Fins, Syrians, Mexicans and Negroes of the lower class.

Instruction in the patient's home is more valuable than ward instruction.

It appears to me that the solution of the teaching problem

of the midwife lies in the carrying of this teaching into their own territory.

It is generally accepted that the medical student and pupil nurse secure their most lasting and valuable experience and instruction in what is known as the out-door practice of obstetrics, namely the care of patients in their own homes.

Broadly speaking, the same general method of instruction can readily be adapted to the needs of the pupil midwife.

The mechanism and details of such methods of teaching can be found in any of the out-door maternity services existing to-day.

This solution of the educational part of the midwife problem has for its advantages over ordinary hospital ward work:

1. It is inexpensive.
 2. It is the best form of instruction as it more nearly conforms with the subsequent duties of the pupil as a graduate midwife.
 3. It does not disorganize existing hospital ward services.
- A general outline of such a plan would include the following propositions:

1. The establishment of schools for midwives in such existing out-door maternity services as shall elect to do so.

2. The establishment of out-door maternity services in connection with existing maternity hospitals which do not already possess them, for use as schools for midwives.

3. That in each maternity service teaching midwives there shall be established a school for midwives, with teachers appointed especially for the teaching of this class of pupil.

4. Rooms should be set aside for lectures, recitations, demonstrations, and drilling in asepsis and the examination of pregnancy. For this last patients applying for care during confinement should be utilized.

5. Time not occupied in attending cases of confinement in their own homes, or in lectures, demonstrating and so on, could be used in witnessing operation and confinements in the delivery-room of the hospital proper.

6. The bulk of the instruction should be given by paid instructors in the patient's own home.

Eventually the more intelligent of the graduate midwives of various nationalities, could, with advantage, be appointed as instructors in the schools for midwives.

7. Text-books for the instruction and use of the midwife would naturally appear as the result of such teaching, as has occurred on the continent of Europe.

GYNECOLOGY AND THE COUNTRY DOCTOR.¹

BY

BENJAMIN R. McCLELLAN, M. D.,
Xenia, Ohio.

UNDER the name of "Country Doctor" the writer would include all those who practise medicine in a territory not readily accessible to a hospital with modern equipment. It is true that among the pioneers in this most important specialty are to be found the names of McDowell, Sims, and others, who were distinctly country doctors; yet it remains a fact that the rank and file of the present-day country doctors are deplorably deficient in their equipment for the important and exacting duties of this specialty.

It cannot be doubted that the physical welfare of womankind in the country is quite as important as it is in the metropolis. While hygienic and sanitary conditions in the country are more favorable than in the cities, yet accidents due to parturition as well as the ravages of venereal diseases are scarcely less common in the former than in the latter; therefore it is an unhappy commentary that compels us to record the fact that the women in the country districts do not receive the prompt and efficient help that they deserve. Especially is this true of the most deserving of all, namely, those who have borne children. Some observer has said that within a radius of six miles of even the smallest villages, there are enough neglected women in need of trachelorrhaphy and perineorrhaphy to keep one surgeon busy. This undoubtedly is an exaggeration, yet it is nevertheless true that in every country community this most deserving clientele is more or less neglected, and thereby robbed of health and happiness that it is the first duty of our profession to vouchsafe to them. It is the object of the writer to emphasize this fact, and to briefly study the reasons why it is true, and to modestly offer some suggestions as to how this unfair and unhappy state of affairs can be corrected.

Even admitting that the present-day medical school training is adequate to the needs of the general practitioner, which it is not, it would still remain a fact that the young practitioner would

¹ Presented at the Twentieth-ninth Annual Meeting of the American Association of Obstetricians and Gynecologists.

ordinarily allow his knowledge of gynecology to lapse into a neglected state of suspended animation during the early years of his professional life, because the average American woman will not readily confide her sex disabilities and diseases to the young doctor only recently graduated in the art and science of medicine and surgery. It is not until he has proven his worth in other cases and along general lines, that she trusts him fully. It therefore often happens that years have gone by without much opportunity to deal with gynecological subjects, during which time, if the doctor is reasonably successful, he has become engrossed with other problems and is too busy to attend to the exactions of an office practice. Indeed, so little of his time is spent in his office that it might with greater propriety be called his supply-room. It is so unkempt that it is about the last place to which a refined woman would think of going in search of advice, which would usually mean a physical examination in order to arrive at an adequate diagnosis.

It therefore happens that only the most distressing and extreme gynecological cases actually come under his observation and challenge his interest. Such cases are usually transported at once to the most convenient hospital, oftentimes with scarcely an attempt at accurate diagnosis.

The more busy the country doctor becomes with house to house visitation, the less careful and painstaking he becomes in his gynecological examinations and the recording of data so necessary to successful diagnosis. There should be little wonder at this when it is remembered that such a man spends much of his time upon the road, has no regular hours for rest, and practically none for relaxation and recuperation of his physical powers. Indeed, he finds himself so bankrupt of these that he is wholly unfit for the exacting requirements of office-work.

The medical schools should provide a more practical course in gynecological diagnosis, and should lay greater emphasis on a working knowledge of pathology as seen in the living rather than in the dead subject. Along with this should go more thorough teaching in laboratory methods of diagnosis as they apply to gynecology. However, progress along all lines of work is so rapid that the postgraduate school has become a positive necessity, and is doing splendid service in uplifting the tone of our profession by keeping the progressive doctors posted as to all that is helpful in the matter of scientific discovery and especially as to the improvement in methods of diagnosis and treatment.

All honor to the men who lead the vanguard of progress. But we must not lose sight of the other fact, namely, that a chain is only as strong as its weakest link, and the man who travels in the well-worn ruts in the road of bygone methods is not only in great danger of losing himself professionally but is doing much to lower the tone and diminish the influence of the profession as a whole. Therefore it becomes necessary to bring this postgraduate work to the reactionaries in our ranks who cannot or will not go to the medical centers for instruction. In extenuation of this state of affairs it must be admitted that the country doctor is oftentimes so much underpaid that it is impossible for him to leave his work and spend sufficient time in search of new and helpful knowledge.

It is here that the medical societies have their greatest opportunity for doing good, by arranging their programs so as to make them serve as veritable schools for postgraduate instruction. In doing so, the greatest good can be secured by making much of the clinical methods of instruction, especially in gynecological diagnosis and treatment. If the county society has not the advantages of an up-to-date hospital and laboratory, then it is up to the district society to arrange a series of clinics during its meeting, in which helpful instruction along these lines shall be provided. Happy the day when the State shall compel each county to maintain at least one good hospital, and shall provide that its clinical material shall be utilized by the county medical society, for postgraduate instruction of the entire profession of the county, whose attendance upon such instruction shall be compulsory. Then, and not till then, will the women of the country be given the medical and surgical attention which is their right; then, and not till then, will our profession be elevated to its rightful place of honor commensurate with its fulfilment of its great responsibilities to the people. Until that day, let those of us who live in country districts remember the words of Emerson, "If a man can write a better book, preach a better sermon, or make a better mousetrap" (or do a better perineorrhaphy) "than his neighbor, though he builds his house in the woods, the world will make a beaten path to his door."

IN MEMORIAM.

WILLIAM WARREN POTTER, M. D.

1838-1911.

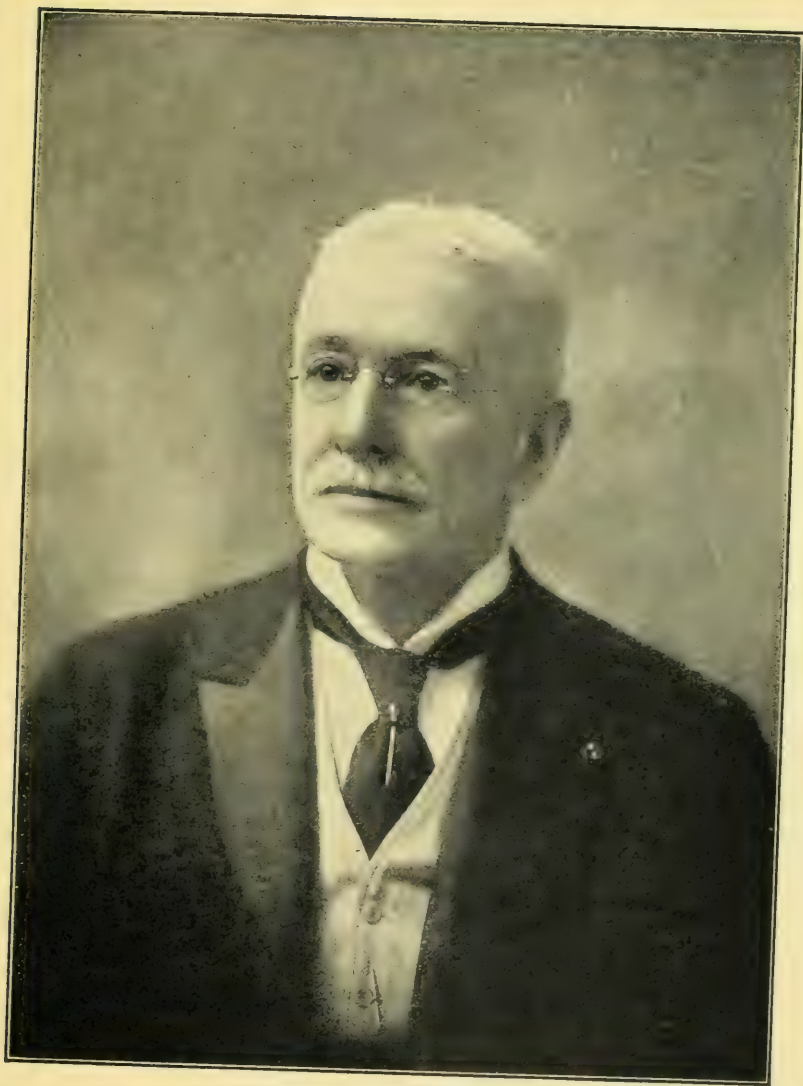
WILLIAM WARREN POTTER, the son of Lindorf and Mary Blanchard Potter, was born at Strykersville, N. Y., on December 31, 1838, and received his degree in medicine from the University of Buffalo upon the attainment of his majority in 1859.

Shortly after Fort Sumter was taken, at the beginning of the Civil war, he passed the examination of the army board and in the summer of 1861 was made assistant surgeon of the forty-ninth Regiment of New York volunteers. He served in the army of the Potomac under McClellan during the Peninsula and Antietam campaigns and under Burnside in the Fredericksburg disaster. During the retreat to Harrison's Landing, June 30, 1862, he was left in charge of wounded soldiers and was captured by the confederates. He was confined for a time in Libby Prison, but was soon returned to his regiment by exchange. He was promoted to the rank of surgeon in December, 1862, and served with the fifty-seventh Regiment of New York volunteers during the Chancellorsville and Gettysburg campaigns. After the battle of Gettysburg he was assigned to the charge of the first division hospital of the second army corps and continued on that duty until mustered out of service with his regiment at the close of the war. He was brevetted by the President of the United States, for faithful and meritorious service, lieutenant-colonel of United States volunteers, and by the Governor of New York, lieutenant-colonel of New York volunteers.

Soon after the ending of the war Dr. Potter returned to Buffalo, restricting his practice to diseases of women at a time when gynecology was just beginning to be recognized as a progressive specialty.

In July, 1888, he became editor of the *Buffalo Medical Journal* and shortly after its owner. He set for it a high standard and made it a constant influence for the advancement of professional knowledge and honor. A task of this nature is necessarily largely altruistic and with him was prompted by his devotion to his profession and to medicine. Its great value is difficult to properly estimate.

Dr. Potter was largely instrumental in securing the passage of the bill establishing the New York State Medical Examining Board, which went into effect in 1891 and which was the basis



WILLIAM WARREN POTTER, M. D.

of the present system of state medical examination, and was the president of the board from 1897 until his death.

He was one of the founders of the American Association of Obstetricians and Gynecologists and throughout the twenty-two years since its inception has been its only secretary and the editor of its transactions. The fame and wide influence of the Association were to him matters of almost loving pride and he gave the difficult work of his office the most careful, exacting, and systematic attention. He felt strongly that his work for this Society was the most far-reaching and important of his many public services.

Dr. Potter was president of the Buffalo Medical and Surgical Association in 1886; chairman of the Section of Diseases of Women of the American Medical Association in 1890; president of the Medical Society of the State of New York in 1891 president of the Section of Gynecology and Abdominal Surgery; of the first Pan-American Congress in 1898; president of the Medical Society of the County of Erie in 1893; and president of the National Confederation of Medical Examining and Licening Boards during 1895 to 1899.

Dr. Potter was married on March 23, 1859, to Emily A. Bostwick, of Lancaster, New York, who died in 1906. There were three children, of whom two daughters survive him, his only son, Dr. Frank Hamilton Potter, dying in 1891. Dr. Potter's career was foreshadowed by his lineage, since his father, his grandfather, and his greatgrandfather were all distinguished physicians.

While his professional activity and attainments made him prominent in medicine and in literature, his charming social qualities, his loyalty and his high ideals gained for him honor and firm friends wherever he was known.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of January 10, 1911.

The President, J. LEE MORRILL, M. D., in the Chair.

DR. HERMAN GRAD reported a case of

ACCIDENTAL HEMORRHAGE.

About three weeks ago at 3 o'clock in the morning I was asked to see a case with the following history: The patient was a primapara, twenty-three years old, in the eighth month of pregnancy. She had labor pains at that time and had had these pains since 5 o'clock the evening previous. At 12 o'clock that day, without apparent reason, she felt a violent motion in her

abdomen. In about five minutes this violent motion ceased and it returned with less violence in a few minutes after and then there was absolute cessation of action in her abdomen. After that she was nauseated. Three hours later she noticed a little bright bleeding, and put on a napkin. She did not pay much attention to it, but in about ten minutes this napkin was thoroughly saturated and she sent for a physician. He stayed until 5 o'clock when slight labor pains set in. The bleeding continued all this time. He then packed her vagina with gauze. The labor pains went on, sometimes pretty hard, sometimes less and at one time there was one and one-half hours without pains, but at 3 o'clock in the morning she had a fainting spell and he sent for me.

I found a woman with some shock, in labor, with dilatation of the cervix enough to admit two fingers. We gave her an anesthetic and delivered by low forceps at 6 o'clock in the morning. There was a moderate perineal tear. The whole placental surface was covered with a huge clot. It was in places an inch thick and covered about four-fifths of the entire placental surface.

What happened in this case was a separation of the placenta by hemorrhage. When the violent motion occurred at 12 o'clock the previous day, the child died, because after that there was absolutely no life felt. The great commotion in the abdomen was at the time of the separation of the placenta. I do not know what the cause could be. She is a perfectly healthy woman and there is absolutely nothing in her previous or family history to show reason for this peculiar hemorrhage.

DISCUSSION.

DR. BRETTAUER.—I had a case not very long ago where the child died with these same symptoms and retroplacental hemorrhage where the cause was undoubtedly nephritis.

During the whole pregnancy there was a slight albuminuria without any other symptom. The patient was kept in bed time and time again. The albuminuria increased during the pregnancy, and the specimen had not been examined that day, but the report next morning showed an enormous increase in the percentage of albumen and casts.

DR. FRANK.—I had a case in which that same symptom occurred, a very marked commotion in the abdomen was noted, but the cause was entirely different. There was a tight knot of the cord which killed the child, and the mother very distinctly noticed at that time that the fetus struggled, so much that it distressed her greatly; after that, fetal movements ceased entirely.

I would like to put the following more in the form of a question than as a statement. I have had two cases of premature detachment of the placenta very much more acute in type than that described by Dr. Grad. In one case the child was premature

but the fetal heart sounds were heard to the end. In the second case, as I delivered the child in a woman who had had seven children previously, with an enormous birth passage and pelvis, the placenta struck me in the face as the live child was withdrawn from the birth passage. Apparently the child has a better chance to live where the process is very acute, more so than if it is slow. Evidently though more blood has been lost, interference with the respiratory function of the placenta is less. I would like to know whether that is the general observation or not?

GLASS CATHETER BROKEN IN THE UTERUS.

DR. MARX.—I was called a week ago this afternoon to the country to divulse an elongated cervix for sterility. I cureted and washed out the uterus through a glass catheter. On withdrawing the catheter, I found half of it gone. You can imagine my situation. Utterly unprepared and away in the country. The only thing I had was a bandage scissors and an ordinary pair of dressing forceps. The question was what to get hold of the catheter with. I took my bandage scissors and slit the cervix in front after slipping up the bladder and then had to do a posterior section. I had a job to get out that glass catheter. After working for three-quarters of an hour, I think I got it all out but I don't suppose I ever spent such a three-quarters of an hour.

Once before this happened to me, about twelve years ago, but that time the catheter was in the bladder, which was comparatively simple. This was in the uterus and I was utterly unprepared for such a condition. It has warned me never to use a glass catheter again inside the body. It was an ordinary glass catheter and perfectly new.

DR. H. C. COE read a paper on

“OBSCURE FORMS OF MENSTRUAL DISTURBANCE.”*

DISCUSSION.

DR. BRETTAUER.—We certainly ought to be very grateful to Dr. Coe for bringing this extremely important subject before us to-night. We have all had our illusions about the value of surgical interference in these cases and have become wiser as the years went by. The cases which come under consideration to-night are those in which we have absolutely no palpable lesions within the pelvis and they are not as rare as one might believe. I personally do not believe in obscure ovarian, or incipient ovarian disease as a cause in these extreme cases of dysmenorrhea. I think with Dr. Coe that a great many of these cases are subjects for the neurologist or subjects for a physician who treats general conditions.

*See original article, page 790.

I want to call attention to two etiological factors in these cases. I have lately become more interested in this subject because I have had some remarkable instances and results. One point is that I have learned that syphilis plays an important rôle in cases of obscure metrorrhagia. I am now reminded of one case which is similar to the one Dr. Coe mentioned. A woman bleeding for two or three years, bleeding after she was cureted, bleeding after the cervix was split and the uterine cavity explored and bleeding after many other efforts to stop it had been made.

When she returned after an interval of several months spent abroad, I was struck by a queer change in her looks. I first thought of myxedema, but this, as is well known, is usually accompanied by amenorrhea and not by metrorrhagia. I had a Wassermann reaction taken which proved weakly positive. The patient was put on a treatment of mercury injections, the bleeding stopped and menstruation became regular.

The other point I want to mention, which seems very important to me and which was discussed quite largely abroad some years ago, when a laryngologist called the attention of the medical public to the point, is the intimate connection between the sexual organs and the nose. My early experiments proved unsatisfactory on account of faulty technic.

A few months ago a physician referred to me for extreme dysmenorrheal symptoms a patient in whom he was specially interested. She suffered not so much from loss of blood as from accompanying gastric and intestinal disturbances and headaches which would set in after the menstrual flow had been well established and which were absolutely not to be combated. I examined the patient by rectum and found a small, normally situated uterus, nothing abnormal in the appendages. I thought I felt both ovaries normally developed. I thought of the work of Dr. Fliess and sent the patient to a laryngologist, asking him to examine the nose and tell me what he found. He found what I expected, hypertrophy of the so-called genital spots in the nose.

The day of the expected menstruation, a 20 per cent. solution of cocaine was applied to certain parts of her nose. Next morning I was informed that the girl had appeared as usual at her place of business and was menstruating without any of her former symptoms. The menstruation lasted as usual for four days, the girl did not have to lie down and was perfectly well.

Immediately after the end of this period, I asked the laryngologist to resect these parts from the nose on both sides, which he did under cocaine. This is now about six months ago and the girl has menstruated since then without any return of her symptoms.

I have since then had several more such instances and am about to make them the subject of a paper to be read in the near future.

DR. FURNISS.—I have had two syphilitic cases corroborating what Dr. Brettauer had to say. One was a private patient that

I saw for the first time in March of this year, when she gave birth to a dead seven months' fetus. Following this her periods were profuse, and of seven or eight days' duration. In July she came with a papular syphilide on her hand, dorsal surface. She was put on specific treatment. When seen a few days ago she reported that her menses were normal in time of occurrence, duration and amount.

Some of the worst cases of dysmenorrhea are those associated with fibroids, and it seems to be characteristic that the pain begins many days before the flow. I remember one patient with this form of dysmenorrhea who had two small fibroids, the size of a pea, one at either horn of the uterus, who was relieved by their removal.

Recently a rather peculiar form of dysmenorrhea, or rather pain in the kidney at the menstrual period, came under my observation. For a week preceding her flow (for the past five months) she would have pain in the right renal region, this disappearing when the flow started. Here I would liked to have distended the renal pelvis until pain was provoked to determine if the produced pain was similar to that from which the patient suffered. She was so nervous that an anesthetic had to be given to catheterize the ureters. Nothing abnormal was detected. In Stoeckel's "Cystoscopy in Women" such a case is referred to, and the cause for the pain ascribed to swelling of the ureteral mucosa, with consequent distention of the renal pelvis. She escaped observation, so that a satisfactory study of her condition has been impossible.

DR. BRICKNER.—The very interesting facts which Dr. Coe has presented deserve discussion. There are few of us, I think, who have not had some peculiar experiences in the line of amenorrhea and menorrhagia. There are two or three forms of bleeding which Dr. Coe has not mentioned. One is the peculiar metrorrhagia that follows the ligation of the tubes to induce sterility. In some curious manner which I do not attempt to explain the menstruation runs about in this type as I have observed it in three cases very closely. A period of amenorrhea for about six weeks follows the operation. Then the patient will flow rather profusely for from ten to fourteen days, her menstruation having been of the four or five days' type before the operation. Then there will be a period of amenorrhea for about three weeks, which will again be followed by a period of metrorrhagia lasting from ten to fourteen days. The time between the periods or succession of flows will become less and less until about six months have elapsed, when the duration of the flow will become very much diminished and in the course of a year menstruation will either have ceased altogether or the flow will be just a mere show for a few hours. I have not been able to explain this phenomenon satisfactorily to myself at all.

A curious form of amenorrhea is that which occurs principally in the Irish and Slavic races, in the girls who come to this country,

young, unmarried girls, who have an amenorrhea for anywhere from three months to one and one-half years. It is a curious fact that American girls crossing the ocean rarely suffer from this peculiarity. If one questions the average Irish girl who comes to the clinic, he will discover that almost invariably she has this peculiar form of amenorrhea. Question our American young women who go abroad and the percentage is found to be very much smaller, and for some reason it does not seem to be peculiar to the Teutonic race. The German girls, in my experience, rarely complain of this form of amenorrhea.

The close relationship which exists between menstruation and constitutional disturbances is exemplified very well in the curious accompaniments of menstruation which some women display at the time of their period or immediately before. I am in pretty constant touch with one patient, for example, who, forty-eight hours before her menstruation invariably gets a pimple just below the lower lip. I have another patient who has an acne-like eruption upon the back twenty-four hours immediately preceding her menstruation. I have a patient under my observation at present who one and one-half years ago fell and struck upon her coccyx; no fracture was demonstrated after a satisfactory examination. Since that time, one week before her period, she invariably gets an intense pain over the coccygeal region. Then there is that vast group of patients who suffer from some constitutional disease; the only one I shall mention is sudden adiposity, which also leads to amenorrhea and which sometimes can be relieved by the administration of thyroid extract. But this subject is too vast for any one person to cover.

DR. FRANK.—In the last year or so I have been paying a good deal of attention to this very form of amenorrhea in fat women. At the dispensary I see three or four cases a month and I find that I can spot them when they enter the door because they are always peculiar in walk, their speech is different, they are fat and sluggish, they are very often hairy on the face, and these very patients whom you can recognize as they enter the door suffer from this amenorrhea. Lately a number of resemblances between these patients and some types of functional hyperpituitism which were mentioned by Dr. Harvey Cushing struck me very forcibly and I have spoken to him about this, and while he was unwilling to say whether there was an overaction or underaction of the pituitary gland, he thought it very likely that some transitory change of that gland might be at the bottom of this disease. The uterus is extremely small; nothing otherwise abnormal is noted in the pelvis. Another thing is that they almost invariably have this marked hair development and that the hair around the pubes is distinctly male in distribution. They are usually from eighteen to twenty-five years of age, and in one or two the condition seems to have been only transitory. Only the other day a woman came in with a distinct growth of hair all over her face, so marked that she had to shave every day and her face was blue from her

beard. She likewise had amenorrhea. In her case there was marked adipositas which possibly was pituitary in origin, especially as diabetes was one of the symptoms.

The remarks of one of the preceding speakers brought these cases particularly to my mind. On account of the obesity I had tried thyroid extract, but almost invariably I find that in two or three days after thyroid extract had been given the patients complained of extreme tachycardia and I had to stop thyroid medication.

DR. MABBOTT.—Listening to Dr. Coe's exhaustive paper makes me feel like complimenting the Society in having the paper read before us this evening and having it published as coming from a member of our Society. But with a rather large experience for a good many years in the dispensary, I would like to sound a little more optimistic note, realizing that Dr. Coe this evening was purposely writing on the other side, and it is only because of his exceedingly large experience that he could have such a large experience with unsatisfactory cases. It having been illustrated by Dr. Brettauer's question that the subject tonight deals almost exclusively with cases in which there is no palpable lesion, I would like to refer to two cases in which there had been a palpable lesion which disappeared during gynecological examination, a small matter with which we are probably all familiar and cases of which many of you have met more frequently than I. I remember one in which I was the examining physician connected with the New York Hospital. On examination I found a distinct cystic mass in the pelvis. A less experienced man examined the patient after myself. I then called upon an assistant surgeon of the hospital, who is chief of the out-patient department, to examine the case with a view to sending her into the hospital for operation, if he approved, and he failed to find any cystic mass. I had certainly found such a mass, but made a reexamination and could not find it. Our theory was that a cyst had ruptured under examination. That was several months ago.

On last Thursday I myself was examining a patient with an irregular menstrual history, including missing a period followed by seven or eight week's flow, and of severe metrorrhagia, and without going further into the details of the case before she came under my observation in the hospital, I would say that while I was examining the left side of her pelvis I distinctly felt a small cyst give way between my internal and external examining fingers. The patient felt faint and experienced some pain and after coming off the table was so faint we had to let her lie down again. In view of the irregular menstrual history I suspected a possible ectopic gestation, although I did not really lean very strongly to that diagnosis. But the patient's condition seeming serious, I immediately had her transferred to a ward where she came under the care of the surgeons, and the following day a laparotomy was made. Without following the history more definitely, I would say that Dr. Hitzrot, who was present at the operation,

informed me that I was undoubtedly right about having felt a cyst rupture under my fingers, and that the cyst was a corpus luteum of pregnancy.

DR. VON RANDOHR.—I would correct one statement made here about the amenorrhea of immigrants, its prevalence among the Irish and Salvic races and not the Germans. Probably the doctor may not have met as many Germans as I have, or he would know that this is a very common complaint among German immigrant girls. The German girls used to be very anemic, much more anemic than the American girls. Whether that is the reason that in a great many German young women that come over, and older women too, have this amenorrhea I do not know. I simply say that it is a very common complaint among them.

DR. WALDO.—A number of years ago I was connected with the German Dispensary and we saw a great many cases where the patients had amenorrhea of two, three or four months' duration following their trip across the ocean. I went into that subject rather carefully and it seemed to me that it was not so much the trip across the ocean that gave these patients the amenorrhea as it was the change in environment.

DR. BOLDT.—About twenty years ago I took up the subject of the treatment of amenorrhea and called attention to the therapeutic value of binocide of manganese in some cases in small doses, 2 $\frac{1}{2}$ or 3 grains, three times a day, or even smaller doses. Among those patients who are suffering with dysmenorrhea without any palpable lesion of the pelvis, one must still resort to empirical methods of treatment, there is no question but what some of these empirical methods are of great value. For instance, in one case Dr. Coe mentioned that he used uterine galvanism. We know better to-day than we did years ago how to regard electricity. On the other hand, some patients will find relief if they are tamponed intrauterine before the menstrual period. A large number of these women can be relieved by some empirical methods. It is doubtful in my mind whether we can find a true solution of the exact cause of some of these menstrual peculiarities.

DR. GRAD.—Dr. Coe mentioned cases of dysmenorrhea with severe headaches. I have had an experience in a case with this type of headache where a certain therapeutic measure has given prompt relief. I have reference to a therapeutic measure suggested by Dr. Livingstone some years ago. He wrote largely on the subject of ergot, and I tried it on a case. It is very remarkable what relief the patient gets from a hypodermic injection of aseptic ergot. It has been the custom with her now to get an injection of ergot every time that she is taken sick and it has the same therapeutic effect. It not alone relieves her headache promptly, but her dysmenorrhea pains are also relieved. One injection of 30 minims of ergot is all that is required.

DR. COE closed the discussion.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Meeting of February 23, 1911.

H. D. FURNISS, M. D., *in the Chair.*

DR. H. J. BOLDT reported a case of

CARCINOMA OF THE UTERUS, SHOWING DANGER OF MISTAKE IN
DIAGNOSIS BY USING FROZEN, UNSTAINED SECTIONS.

W. L., aged forty-nine years, married twenty-six years; was the mother of seven children, the last born twelve years ago. Menopause six months ago. For fourteen years the patient has been annoyed by something protruding from the vulva, which during the last six months has increased in size. She also complained of much "bearing down," particularly when attending to her household duties.

Examination showed that the woman had a procidentia of the second degree, that is, that the vaginal portion of the cervix has descended to the vulva; with this there is a descent of the vagina and an exceptionally large cystocele. On the posterior lip of the cervix there is a polyp 1 1/2 cm. in diameter, with a broad base. The base is indurated and feels quite hard to the touch, so that it causes the impression that the polyp is malignant. Hence before proceeding with the prolapsus and cystocele operation proper, the polypus was excised and a frozen section made in the laboratory. The report was returned that it was a chronic inflammatory change and not malignant.

An extensive operation for the cystocele and descensus was then done.

On the following day the pathologist gave the information that a re-examination of the section after staining showed that he had erred in making a diagnosis of a benign condition; it was distinctly carcinoma.

Owing to the previous plastic operations, the subsequent operation became technically somewhat difficult; everything that had previously been done was necessarily undone again, so as to extirpate the uterus, which was in this instance done per vaginam rather than per abdomen, because the disease still appeared to be quite superficial, so that the necessity of doing an extensive operation did not seem to be present.

The interesting features of carcinomatous degeneration of a broad-based cervical polypus, the mistake in diagnosis because of the examination of a nonstained frozen section, and the entire absence of even the slightest symptom of malignancy, are the ones upon which stress is placed.

DR. BOLDT also reported a case of

TUBAL GESTATION.

The patient, twenty-six years old, had been married five years and during that time had two abortions. She asserted that for a period of two weeks she had intense cramp-like pain in the lower abdomen, accompanied by atypical bleeding. There was no hematocele behind the uterus, but the adnexum on the left side was enlarged, so that with the history and objective symptoms a mistake in the diagnosis was not likely. The only question to consider was whether immediate operation or expectant treatment would be best. Surgical intervention was decided upon, because of the intense pain that the woman suffered. There was a large quantity of fluid blood in the abdomen, but few clots.

DR. BOLDT.

FIBROMYOMA WITH HYALINE AND CYSTIC DEGENERATION WHICH HAD BEEN MISTAKEN FOR A MALIGNANT TUMOR.

Clinically the symptoms were such that the diagnosis of a malignant neoplasm, which had been made at other hands, seemed perfectly justifiable, indeed was corroborated. The patient's cachectic appearance and emaciation, with the seeming immobility of the tumor, had caused other attendants to consider the condition inoperable. The pelvis was completely filled by the tumor. It is indeed remarkable that no marked pain was caused by its pressure. The operation presented no difficulty.

THE PRESENT STATUS OF THE MIDWIFE.*

DR. THOMAS DARLINGTON read this paper.

THE MIDWIFE IN RELATION TO MATERNAL AND INFANT MORBIDITY.†

DR. RALPH W. LOBENSTINE read this paper.

ATTEMPTS AT REGULATION OF MIDWIFE PRACTICE.

DR. WILLIAM E. STUDDIFORD said there was one thing he would like to have changed in the introduction of the subject, namely, that this meeting should express an opinion not for the

* See original article, page 870.

† See original article, page 876.

needs of regulation of midwife practice but for the needs of the education of the midwives. They already had all the regulations and laws necessary for the practice of midwifery but it should be remembered that there were many of these women whom it was impossible to educate. This meeting should have for its object the subject of the education of midwives, how to go about it and what could be done.

The history of attempts to regulate the practice of midwifery in this country dated back a great many years, the first attempt being in 1803 before the County Medical Society, but no action was taken. In 1885 Dr. Garrigues attempted to have a hospital incorporated which had provisions for the training of midwives. He was met with great opposition on the part of the medical profession and his plea to the legislature was not granted. Two or three attempts prior to 1907 had been made to have laws passed for the regulation of midwives; the first bill was, we believed, in 1803, and this was entered by either the Medical Society of the County of New York or the New York Academy of Medicine. The bill was lost by default. In 1808 another bill was drawn by the Society of Medical Jurisprudence and presented to the legislature; it was a very elaborate bill; this was defeated. In 1906 Crowl, acting for the Nurses' Settlement, made an investigation. He interviewed about 500 midwives and, as a result of this investigation, the Charities Organization Society and the Nurses' Settlement took an active interest in the matter and presented to the Department of Health of the City of New York the results of their work. Finally a bill was drawn up. The original bill was based on the present English midwifery law which went into effect in 1902. After several conferences with members of the Medical Society of the County of New York, the New York Academy of Medicine, the New York Obstetrical Society, the Charities Organization Society, the Nurses' Settlement, and other organizations, a bill was prepared and presented. In view of past efforts it was decided that it was better to draw a simple law which would affect the state of New York and give power to the State Board of Health. Rules and regulations which were deemed wisest and necessary for the control of midwifery were formulated and presented. This bill was passed. Then came the practical working of the law after the rules and regulations had been adopted. At that time it was estimated that there were probably three or four thousand midwives practising in the state of New York and they were all given notice that on a certain date they would be required to obtain permits to practice midwifery from the Department of Health. As a result there were received 2,000 or 2,500 applications. In the first year 1,400 applications were granted. The Board of Health felt that it was obligatory to grant a certain number of permits.

Dr. Studdiford said there was absolutely no place in New York City, nor in the entire country, so far as he knew, where any midwife could go to receive proper training. How were

these permits granted? The only way she could obtain one was to present certificates from three people who knew her, two being physicians and the third either a clergyman, priest or rabbi. It was very surprising to read the certificates that came in. Certain men granted many certificates. Certain conditions arose which could not be covered by the law. A number of physicians in various parts of the city had the midwives subsidized, that is, the cases were taken in the physician's name but the midwives looked after the cases. The Department of Health did the best it could under these conditions. It had no funds for the adequate instruction of midwives; however, one or two inspectors were started in with this work. However, up to the present time, no appropriation had been granted for the thorough instruction of midwives. Under the present conditions it was not a question of further law; they had a law to regulate midwifery. They did need money for instructors in the Health Department. They need a place where midwives could go to get adequate training. It was now up to the medical profession to provide such places. Until they were willing to give suitable education to these midwives they had no one but themselves to blame for the bad and inefficient work of the midwives.

OPPORTUNITIES FOR THE EDUCATION OF MIDWIVES.

DR. JOHN WINTERS BRANNAN continued the discussion in this symposium. He said it was probably known to many in the room that Bellevue Hospital was about to undertake the training of midwives. When the attention of the trustees was called to the fact that there was no place where midwives could learn to exercise their profession safely, and that it was impossible to eliminate or suppress them, and also that the Board of Health was empowered to regulate them and require that they should know something about their profession, it seemed that the time had arrived when they may be given the opportunity to obtain some training. Therefore the trustees decided some two months ago to establish as soon as possible a course of instruction for these women, and have asked the obstetricians of the hospital to state what that course shall be. They appreciate that New York City has been very generous to the hospitals under their charge. Money has been freely given for the erection of new buildings. Conditions had so changed within the last five or six years that now they were able to say what they were going to do. The old emergency building is about to be vacated and can again be used for lying-in women. The upper floor will accommodate some ten or fifteen patients, and the lower floor can be fitted for lectures and demonstrations. The midwives can be lodged on the hospital grounds in one of the old dormitories. Not only a ward service but an out-patient service was contemplated.

With regard to the length of the course, opinions differ. On the Continent it is two years; in England one year. Dr. Brannan

felt that a short course was preferable to a long one. If they started with a short course and experience proved that a longer one was required, it could be readily lengthened, as has been done in the case of medical schools.

What should be taught? That was for the obstetricians to say. The midwives certainly should receive the instruction nurses get and even more.

We have been asked regarding the language. This will be a difficult matter to deal with for a time. He thought, however, that they could find doctors and nurses who spoke sufficient German and Italian to teach at first; that after a time when some midwives had been sufficiently trained they in turn might be used to teach.

He suggested that they do what the Department of Health has done, have full directions printed in several languages; this would help a great deal. Recently some one had sent a midwife to Bellevue with the information that she might be taught obstetrics. From Bellevue she was sent to Harlem Hospital and taken in charge. She was an Armenian and spoke very little English. However, she was received as a pupil and shown how things were done in the admirable obstetric service of that hospital. At the end of four weeks, during which she saw twenty cases, she received a certificate. This Dr. Brannan showed and thought it of especial interest because it was the first one of its kind ever issued in this country.

The Board of Health requires that a midwife must see twenty cases of labor in order to obtain a license to practice. Dr. Brannan was of the opinion that when the new school was established the course of instruction should not be less than three nor more than six months in length.

REMEDY FOR THE ABUSES OF MIDWIFE PRACTICE.*

DR. JAMES CLIFTON EDGAR read this paper.

DISCUSSION.

CATHERINE C. VAN BLARCOM (by invitation) believed that they should provide not only more training for midwives but more regulations for midwives. The midwives of New York City to day were not competent. All agreed that everything had been done that was possible under the present law and the work of the Department of Health had been monumental. She was particularly interested in this question because of the work she was engaged in in the prevention of blindness. The committee, of which she was secretary, was in fact a state committee and they were as much interested in the eyes of children outside of the city of New York as of those in the city of New York. This committee had spent nearly two years in studying the midwifery problem in this country and they had tried to learn lessons from

*See original article, page 881.

what had been done in the old country. They had been impressed with the simplicity and practicability of the English way of getting at this problem. She sincerely hoped that a law enacted in New York State would provide for the proper training and regulation of midwives. Miss Blarcom told of the salient features of the English law. Although the law there had been severely criticized, the results obtained were very good. The infant mortality had been decreased as well as had deaths from puerperal sepsis; there had been a marked decrease in the number of cases of ophthalmia neonatorum. What she wished to have accomplished in the city of New York was the enactment of a law requiring that midwives should not be registered even for examination until they had passed through a school which had been standardized by a state body. The standard should be the same all over the state; there should be no unequal training.

Miss Van Blarcom hoped that schools would be opened in Rochester and Buffalo; but unless these schools were standardized by the state body they would not, in her opinion, keep up to the standard. These schools should be in the hands and under the control of the regents; this was an educational matter. As a matter of fact it required clever people to teach midwives; they should know more regarding obstetrics and nursing. She wished that this matter could be placed under the control of the State Board of Regents. She wished the medical profession would help them in their endeavors and that the New York Academy of Medicine would approve the state legislation as described.

DR. GEORGE L. BRODHEAD said that when one considered the number of times the subject now under discussion had been brought up and how many times it had fallen into innocuous desuetude, they must believe that something had been accomplished to-night. The figures given by Dr. Lobenstine convince one of the necessity of training midwives. When we consider that from 40 to 45 per cent. of the births are taken care of by midwives we certainly must appreciate the necessity for their proper instruction and training. Dr. Brodhead thought that New York should take the first place in establishing schools for the women and obtain for them a standardized course of instruction. At the present time, with the necessity of having so many midwives in the city of New York, there was an urgent call for instruction of the largest number of midwives and in the shortest time; a period of three months should be the minimum, but six months of instruction Dr. Brodhead thought to be about the right length of time. If it became necessary to increase the term for instruction, that could eventually be done. Dr. Brannan spoke of establishing such a service in the city hospitals; Gouverneur Hospital would probably be utilized for the instruction of midwives, but the time would come when there would be established stations for the instruction of midwives

all over the city; also where there would be trained men who would go out to the aid of the midwives in their difficult cases. There was no reason why the midwives should not have the best help available in their difficult confinements.

The New York Board of Health had practically unlimited power in the establishment of a standard for the practice of midwifery; whenever a standard is established, one that was fit, the Board of Health would see that it was lived up to. Establishing the first school for the instruction of midwives at Bellevue Hospital was a move in the right direction, and he hoped that the various hospitals in the city would establish in the near future similar schools of instruction; only in this way could midwives obtain proper instruction.

DR. SARA JOSEPHINE BAKER said that for two years she had made some supervision of midwives in the city of New York in order to get an idea as to who they were, what they were, and what they were doing. She believed that 90 per cent. of the midwives of the city of New York were by no means worthless; as a general proposition their work was generally good and compared favorably with a certain class of physicians that would get these cases if it was not for these midwives. Last year 40 per cent. of the births in New York City were attended by midwives and the number of deaths from puerperal septicemia was remarkably low. She believed that they had but thirty-three cases of puerperal septicemia to report, a very low percentage when one considered the large number of patients cared for by them.

With regard to ophthalmia neonatorum, since the Department of Health had made compulsory the use of nitrate of silver solution instilled into the eyes of the new-born, the number of cases had greatly decreased. Last summer 33,000 births had been reported by midwives; after careful inquiry it was found that there had occurred a marked decrease in the cases of ophthalmia neonatorum and figures were furnished that showed that the number of these cases compared very favorably with those furnished by the medical profession. The use of nitrate of silver solution instilled into the eyes of the new-born had become widespread among midwives. The work of the Health Department in this direction was admirable.

The operation of abortion was not practised by many midwives in this city; those who did so, did so openly. When anything happened, a physician was called in and he signed the certificate. These women were not the practicing midwives.

Dr. Baker approved Dr. Brannan's three months' course in instruction in midwifery; this certainly was an excellent beginning and if found necessary the length of time for this instruction could be lengthened.

DR. J. CLIFTON EDGAR presented the following resolution which was seconded by Dr. BROOKS H. WELLS and unanimously carried:

WHEREAS: It is estimated that about 50 per cent. of the births

in the large cities of this country are attended by midwives (in New York City approximately 50,000 births are reported annually by midwives) and

WHEREAS: The profession of midwifery in this country is followed, in most instances, by ignorant, untrained, incompetent women, and

WHEREAS: Some of the results of obstetrical malpractice are unnecessary blindness, mental and physical degeneracy and death of infants, and unnecessary suffering, invalidism and death of mothers, and

WHEREAS: Although both physicians and nurses in this country are given instruction in the treatment and care of child-bearing women and new-born infants, there is no existing provision for the adequate training of women who take into their keeping the lives and future wellbeing of this large number of both mothers and infants, therefore be it

Resolved: That the Section on Obstetrics and Gynecology of the New York Academy of Medicine recommend that measures be taken in this State to secure state legislation which shall provide for the training, registration, licensure, supervision, regulation and control of women engaged in the practice of midwifery.

REVIEWS.

DIE ERWEITERTE ABDOMINALE OPERATION BEI CARCINOMA COLLI UTERI (AUF GRAND VON 500 FÄLLEN). Von PROF. DR. E. WERTHEIM, in Wien. Large Octavo, 223 pages; with eleven illustrations and six plates. Urban und Schwarzenberg, Berlin and Vienna, 1911.

This monumental monograph records Wertheim's personal experience from 1898 to the present day. In a masterly but modest fashion he gives a historical review of the development of the operation from Freund's first tentative efforts, up to the fully developed technic of to-day.

In the short compass of a review, only isolated and specially important points can be dealt with. Immediately before opening the abdomen the cervical growth is excochleated and paque-linized. The vagina is packed with bichloride gauze 1-1000. Before opening the vagina from above, it is again swabbed and dried. With few exceptions subperitoneal drainage only is employed, the peritoneal cavity being completely closed. The parametria are grasped on each side with three or four heavy curved clamps and these are later replaced with ligatures. Thus very extensive resection of the cellular tissue is attained with a minimum of bleeding. Wertheim never catheterizes the uterus. The finger is pushed from before backward beneath the uterine vessels, thus penetrating the upper portion of the parametrium

which is ligated together with the vessels. Only six times was the ureter purposely resected, due to the fact that the ureter is particularly resistant to cancerous invasion. If cut across, immediate reimplantation is practised. In this series of 500 cases ureteral fistulæ developed thirty-six times (usually between the seventh and twenty-first day); of these fifteen closed spontaneously. A common sequel of the operation is temporary vesical paralysis and cystitis.

After the hysterectomy is over, Wertheim splits the peritoneum more widely and removes all palpably enlarged regional lymphatic glands (external and internal iliac, in the vascular triangle, and sacral). The excochleation is performed without narcosis (this saves fifteen to twenty minutes of anesthesia). In thirty-three cases lumbar analgesia was employed.

Of all cases which consulted the author 50 per cent. were operated upon. Lately he has subjected 61 per cent. to operation. Practically every case is begun as an exploratory laparotomy and only after the abdomen has been opened is a final decision as to procedure determined upon. Of 940 cases of carcinoma seventy-three were merely exploratory, twenty-one were vaginal hysterectomies (merely microscopical carcinoma, extreme obesity, etc.), 500 radical operations, the remainder inoperable.

The mortality was ninety-three in 500 cases (first hundred with 30 deaths, second hundred, 22; third hundred, 17; fourth hundred, 9; fifth hundred, 15). The most common causes of death were: nine from pyelonephritis; thirty-nine from peritonitis; twenty-two from cardiac weakness or cachexia. In 250 cases five or more years have elapsed since operation. Of these seventy-eight have shown recurrences, and 106 are well; there were sixty-three operative deaths, and three died of intercurrent illness. Most recurrences arose from regional glands. Recurrence has been recognized by the cachexia and localized pain. No true secondary operations were feasible in any instance.

The large material at the author's disposal has permitted him to contravert certain hitherto accepted dicta. Women under thirty years of age remain permanently well, even more frequently than older patients. No difference was noted in the ultimate outcome between adeno- and squamous-celled carcinoma, nor does pregnancy make the prognosis any worse. Where gland infection is formed, however, the after-results are much poorer (30 per cent. recurrences without glandular involvement, compared to 88 per cent. where carcinomatous glands were found). Calculated by Winter's complicated method the absolute ratio of cures was 18.4 per cent., comparing more than favorably with the 12.6 per cent. obtained by the vaginal method.

Every gynecologist should read and study this important contribution which deals with equal brilliancy and thoroughness,

with the technic, pathology, and ultimate result of carcinoma of the cervix. The author has succeeded in presenting his subject exhaustively without, however, burdening the reader with a bewildering mass of detail. To those who desire to study the 500 cases separately, the complete tabulation is accessible, while the more casual reader is spared the perusal of innumerable case histories so often found scattered throughout the text of similar monographs.

R. T. F.

BLAKISTON'S QUIZ-COMPEND. COMPEND OF GYNECOLOGY. By WILLIAM HUGHES WELLS, M. D. Fourth Edition, Revised and Enlarged. With 153 illustrations. Small octavo, 290 pages. P. Blakiston's Son & Co., Philadelphia, 1911. Price \$1.00, net.

This little book is evidently popular, as it has reached its fourth edition. Fifty-two of its pages are devoted to instruments, methods, etc.; the rest of gynecology is contained in the remaining two hundred and sixteen pages.

R. T. F.

GYNECOLOGICAL THERAPEUTICS. By S. JERVOIS AARONS, M. D. (Edin.), M. R. C. P. (Lond.) With Foreword by SIR HALLIDAY CROOM, M. D., F. R. C. P., F. R. C. S. Small octavo, 178 pages. William Wood & Co., 1910. Price \$2.00, net.

This is a useful little book which contains a short but complete account of so-called "medical gynecology." By avoiding all excursions a great deal of information has been compressed into small compass. The general practitioner, who is naturally unwilling to be burdened with large treatises, will find this book of value. A great many prescriptions might with advantage be expurgated from the next edition.

R. T. F.

NEW AND NONOFFICIAL REMEDIES, 1911. Containing descriptions of articles which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association, prior to Jan. 1, 1911. Price, paper, 25 cents; cloth, 50 cents. 282 pages.

This is the 1911 edition of the annual New and Nonofficial Remedies, issued by the Council on Pharmacy and Chemistry of the American Medical Association, and contains descriptions of all articles approved by the Council, up to Dec. 31, 1910. There are also descriptions of a number of unofficial non proprietary articles which the council deemed of value. The action, dosage, uses and tests of identity, purity and strength of articles are given.

In the arrangement and the scope of individual descriptions, the present edition does not differ widely from the 1910 edition, but it contains about twenty-five additional pages, these being required to describe the articles accepted by the Council during 1910.

Besides indicating to physicians the proprietary articles which the Council's examination has found to be honestly marketed, and containing accurate descriptions of these articles, all similar articles are arranged under group headings; thus the physician at a glance can learn that atoxyl and soamin are practically identical articles, and that arsacetin is a closely related body. Again, the several proprietary solutions of the blood-pressure-raising principle of the suprarenal gland are listed under a general title "epinephrin," and the manner in which the solutions differ from each other can be learned at a glance. In this same way, the medicinal foods are brought together and their relative value compared.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Actual Indications for the Conservative Cesarean Section.—Cyrille Jeannin (*Prog., med.*, Dec. 17, 1910) says that we must temper our enthusiasm for the Cesarean section, and acknowledge certain restrictions in our work; this is an operation that gives a certain percentage of post-operative deaths, 4 to 5 per cent. The operation is easy and elegant in a first operation, long and difficult in a second performance on the same subject. We must acknowledge that we can never insure that the cicatrix will always be sufficient to prevent the possibility of uterine rupture in a second pregnancy. Puerperal infection is an effectual contraindication to the performance of this operation. It should be done only when it is formally indicated; this happens when no other operation is possible; when this operation is less dangerous for the mother than any other, and may save the life of the child. Cases in which the operation may be considered include bony deformities; dystocia from condition of the soft parts; maladies and accidents of pregnancy; labor in a woman in the death agony or already dead. Taking up each of these conditions separately the author considers first rachitic pelvis so small that natural labor is impossible. Here operation is indicated, and should better be done as near as possible to the normal time of labor, but with ordinary surgical conditions fulfilled. In kyphotic pelvis when delivery is impossible Cesarean section is justified. In tetanus of the uterus with danger of rupture immediate section is justifiable. In obstacles caused by the conditions of the vagina, cervix or other soft parts the section is not indicated. Accidents and diseases of pregnancy do not justify its performance. This operation should be performed only under the best of conditions, with proper assistance, asepsis, and with all the ordinary requisites for laparotomy. It is especially indicated in contracted pelvis, yielding the first

place to the vaginal operation in accidents of pregnancy, and to the mutilating Cesarean section in dystocia due to the soft parts.

Indications for Hysterectomy in Pregnancy Complicated with Uterine Malformations.—Rochard (*Bull. Gen. de Ther.*, Dec. 23, 1910) states that the diagnosis of malformation of the uterus is generally impossible before operative procedures are undertaken to relieve the symptoms occasioned by the development by pregnancy. The diagnosis of extrauterine pregnancy, or tubal pregnancy about to rupture is the one generally made. When a laparotomy reveals the existence of a uterus with two fundi with two products of conception present it becomes a question whether the organ should be removed, or whether the pregnancy should be allowed to continue after the closure of the abdomen. If there is a condition characterized by inflammation and which would be likely to produce abortion it becomes our duty to remove the uterus in the interest of the patient, who is liable to lose her life in any succeeding pregnancy, if not in the one existing. If one or more successful pregnancies have already been gone through the uterus should be allowed to remain. When there is a probability of successive abortions it should be removed. The author has observed a case of this kind, in which there was no external indication of abnormality, but in which crampy pains, nausea, swelling of the abdomen, and syncope caused a diagnosis of ruptured tubal pregnancy to be made. Operation revealed a uterus bicornis—bipartus, with a pregnancy of about the same date in each fundus. There was a complete separation of the two fundi, with a sort of ligament between the two. One uterus was ready for abortion, the other being still normal. Here the uterus was removed, one ovary being left in place.

Retro-placental Hemorrhage.—M. P. Lequeux (*Bull. de la Soc. d' Obst. d' Paris*, Dec. 15, 1910) describes a case of retro-placental hemorrhage in a primipara thirty-two years of age, occurring suddenly in the seventh month with violent abdominal pain. The uterus had suddenly increased in size until it was as large as at full term; labor had not commenced and the patient was suffering from shock; later, external hemorrhage commenced. An immediate Cesarean section saved the life of the mother, the fetus being dead. In such cases the induction of premature labor is not possible, because it takes some time and the patient will rapidly bleed to death. If the case is one of old hemorrhage, or if the ovum is open and there is a possibility of inflection, the Cesarean section is contraindicated. In the treatment of such cases whenever there is a possibility of labor by the vagina we should deliver in this way. If these conditions are absent we must interfere surgically. In case of infection, old hemorrhage, or open ovum we must do a vaginal Cesarean section. If there is neither infection nor shock and the hemorrhage is recent with closed ovum, the general condition being good, we may do an abdominal Cesarean section. If in the course of this

operation there is reason to believe that further hemorrhage cannot be avoided, or if there is any reason to suspect latent infection, we should not hesitate to do a hysterectomy, or in case of urgency a Porro operation.

Mammary Abscess During Pregnancy.—J. T. Williams (*Bost. Med. Surg. Jour.*, 1911, clxiv. 188) records such a case in a woman of twenty-six years, the mother of five children, who had never had serious trouble with the breasts or nipples. The abscess developed when about eight months pregnant. The writer states that 5.5 per cent of the recorded cases of breast abscess occur during pregnancy. Organisms are present on the nipples in 100 per cent. and in the milk ducts in 86 per cent of all pregnant women. When their growth is predisposed to by engorgement, or the resistance of the breast tissues is lowered by injury, or the organisms present are of unusual virulence, they attack the tissues and produce inflammation. The prophylaxis of breast abscesses during pregnancy consists in absolute cleanliness of the nipple, and prompt treatment of mastitis by bandage, ice and saline catharsis.

Relations of Biliary Lithiasis to Pregnancy and Labor.—J. Audebert and R. Gilles (*Ann. de gyn. et d'Obst.*, Nov., Dec., 1910) discuss the relations of pregnancy and labor to the production of gallstones and the proper treatment of these conditions. Of the causative relation between the pressure of the uterus, the changes in metabolism of the pregnant state, and the production of biliary lithiasis there seems to be no doubt. There is a defect of the bile circulation from the pressure of the uterus, and the nutritive troubles incident to the presence of the fetus, resulting in an acid reaction, tend to cause precipitation of the bile salts. The presence of bacteria assists in the occurrence of infections of the bile passages. The first prominent symptoms are due to the migration of the stones: colic, vomiting, and icterus. In other cases an empyema of the gall-bladder occurs with symptoms of septicemia. Prophylactic treatment will address itself to prevention of infection by the bacillus coli. Stagnation of the contents of the bowels should be prevented by cholagogue cathartics, and a diet that will avoid fermentation. Washing out the bowels and stomach is of value. Palliative measures in cases of colic include hot applications and sedatives. Obstetrical treatment will seldom be called for. Operation can, in most cases, be delayed until after delivery. In only the most serious cases should operation be undertaken during pregnancy. Then cholecystotomy is usually sufficient. After labor has taken place operation may be done, preferably cholecystotomy.

GYNECOLOGY AND ABDOMINAL SURGERY.

Retroversion-flexion of the Uterus and Mental Troubles.—R. Schockaert (*Bull. de la Soc. Belge de Gyn.*, vol. xxi, No. 1, 1910) brings forward the important influence that uterine diseases have on the mental condition of some patients. Gynecological

troubles that seem insignificant in themselves have a marked influence on the mind and the whole economy, with reference especially to psycho-pathology, sociology, and criminology. Retroversion-flexion is the affection that has the greatest influence in this direction. It is the cause of a great number of symptoms connected with the stomach, intestines, rectum, bladder, and nervous system. It is a very frequent cause of so-called hysteria. The author describes three cases in which the patients had been reduced to a suicidal condition by this complication. Two of them were so deeply melancholic that they could not be aroused to comprehend what was said to them, so that they were not open to suggestive therapeutics. All three of them were brought back to a condition of normal mental state, happiness, and usefulness by the performance of the Alexander operation, which kept the uterus in a normal position. In hysteria and in true psychopathies and mental diseases attention should be given to the condition of the genital organs in women, whether married or single. In all insane asylums it is important to ascertain the condition of these organs in order to give the most effective treatment to female patients.

Results of Vaginal Fixation.—J. Voight (*Frauenarzt*, Band xxv, 1910) gives the results of his observation of the success of the operation of vaginal fixation of the uterus in sixty cases. The technic of Dührssen was employed. In retroflexion of the uterus the author believes this to be a useful form of operative interference, without danger and with a certain result. This is not an operation that will bring upon the practitioner blame for failures. The remote results except in marked prolapsus are excellent.

Primary Sarcoma of the Pelvic Connective Tissue.—Enrico Martini (*Ann. di ostet. e gin.*, Dec., 1910) says that between the layers of the broad ligament is a mass of loose connective tissue, rich in fat, muscular tissue, vessels, and lymphatics, which is favorable to the occurrence of inflammations and neoplasms of various kinds. Fibromata and fibromyomata are more frequent than sarcomata in this location. Sarcomata grow very rapidly, either descending into the pelvis and interfering with the functions of the rectum and bladder or ascending into the abdomen. They extend enormously and are very malignant. When no operation is performed they inevitably end in death with metastases. When operation is done they recur and death is put off only temporarily. The author recites a case in which recurrence was delayed for only a few months by two operations. The true point of the beginning of these growths cannot be ascertained; clinically they give rise merely to the diagnosis of a large malignant growth of some kind. These tumors are very rich in vessels, and have a tendency to softening and edema. The symptoms due to compression of the bladder and rectum, to weight and pain in the pelvis are most marked.

Artificial Vagina by Transplantation of the Intestine.—J. Abadie (*Rev. de gyn.*, Jan. 1, 1911) says that the methods heretofore used to obtain a practical vagina in cases of congenital absence have not been very satisfactory, since the vagina produced had to be continually dilated in order to keep it patent. The idea of making use of a portion of intestine as a lining for such a canal was brought forward by Baldwin in 1904. Since then six cases treated in this way have been reported to which the author adds a seventh. A portion of the intestine with its mesentery is separated from the intestine and brought down to take the place of the vaginal wall in a space opened between the bladder and rectum. In the author's case there was a vulva but an entire absence of vagina and uterus. Remnants of the ovaries were found at operation, but no tubes. The operation was successful in producing a canal which did not require dilatation, which functionated perfectly and appeared natural. The patient was married and was able to have connection satisfactorily to herself and husband. The only objection to this operation is the fact that the abdomen must be opened, but this is justified in view of the satisfactory results.

Luminous Rays, X-rays, and Radium in Gynecology.—R. Foveau de Courmelles (*Gaz. de gyn.*, Jan. 1, 1911) says that the rays of the sun or those from an electric lamp can be used for therapeutic purposes. Light penetrates to some depth, as is shown by sensitized papers placed in the spinal canal, the mouth, or the vagina. Photographs have been obtained with the chemical radiator of Foveau by placing positive sensitive paper in the vagina supported by red wadding, with the arc before the abdomen at a distance of 50 cm. The use of solar light or the arc light directed on the abdomen in prolonged sittings has a drying effect on certain cases of metritis and salpingitis. Radium is of great use in gynecology. The radium tube is placed in the vagina covered with a metallic tube, inclined so that the powder gravitates toward the diseased region. It has a powerful sedative, regressive action of the same nature as the x-rays. Radiotherapy is of value in diagnosis and in the treatment of fibromata. After ablation it is of use to prevent recurrence of cancers. Its use relieves pain markedly. The author claims to have seen the cessation of severe pains, hemorrhages, and regression of the glandular metastases and of the tumors themselves. In a case of cancer of the bladder and uterus that was inoperable the pain and hemorrhages were relieved and the bladder, which at first was much contracted, increased in size so that a larger amount of urine could be retained. Some fibromata degenerate into carcinomata. The author applied the x-rays in two cases in which, from the color, pain, and cachexia, he inferred that this process was taking place. The result was an astonishing amelioration. All fibromata are favorably affected, the earliest treated giving the best results. Irradiation may cause abortion and sterilization in the human subject. Examination of ovaries that had been

submitted to the rays showed the absence of follicles, all of which had become degenerated. The effect of this sterilization is valuable in the cure of fibromata. The more recent and the more hemorrhagic the fibroma, and the older the patient, the better the results.

Epidural Injections for Backache.—Hans Albrecht (*Zent. f. Gyn.*, Jan. 14, 1911) says that backache is a symptom that results from all sorts of conditions. It may be of peripheral or central origin; it is associated with pyelitis, chronic constipation, sigmoiditis, gastroptosis and enteroptosis, due to the pelvic congestion that is produced by them. Hyperesthesia and hyperalgesia of the spinal nerves cause neuralgic pains. The author divides these manifestations of pain into two categories, functional neuroses, reflex from some other organ, and neuralgias due to general conditions like anemia and chlorosis. These symptoms are amenable to treatment by means of epidural injection of physiological salt solution, but not if caused by major gynecological troubles. Of the cases treated in this way there were sixteen of severe functional neuroses, nine of which were cured by the first injection, one after three injections; four cases were improved, and two had no result. There were six cases of infantile uterus; in four recovery from pain was immediate, in one relief was temporary, and one had no result. There were seven cases of enteroptosis. After other means had been used to relieve the prolapsus six were relieved of the backache by injections of salt solution. Of cases of retroflexed uterus with pain after fixation, pain remained in seven and in three cases was relieved by injections; three were not benefited. Of thirteen cases of old inflammatory lesions of the adnexa, eleven were relieved by injection. In two cases of backache after extirpation of the uterus relief was given. In seven cases of enuresis there was prompt relief in two. The report includes fifty-three cases of backache with 72 per cent. of cures; 25 per cent. of negative results. Relief is not obtained in major genital diseases, but it marked in neuroses and neuralgias.

Displacement of the Kidneys as Accompaniment of Enteroptosis.—P. Kroemer (*Gyn. Rund.*, fifth year, part i, 1911) tells us that one of the results of frequent pregnancies is a relaxation of the abdominal muscles, which is followed by a dislocation of the abdominal organs from their places, a descent of the transverse colon, the kidney and sometimes of the left lobe of the liver. The stomach and small intestine partake of the sinking and sometimes half of the contents of the abdomen is found in the lower portion. Each pregnancy increases the tendency. The exaggerated lordosis of pregnancy helps to enlarge the natural space occupied by the kidney and this slips from its place, the right one being the more often displaced. The pressure of the skirt bands in the working woman making the diameter of the lower thorax smaller assists in the displacement. The frequent coincidence of displacement of the kidney with gall-

stones has been noted by some authors, and Edebohls says that in more than half his cases of displaced kidney chronic appendicitis is also found. The twisting of the vessels of the displaced kidney causes hydronephrosis and colic-like attacks with urine that contains blood and casts alternating with a thin, light colored urine. Among the better classes displaced kidneys are rare, as they are in nulliparæ. The bandages sold for replacement of these conditions are generally unsatisfactory and nephrorrhaphy is necessary to obtain a cure. The author gives three illustrative cases.

Sexual Education by the Family, by Science, by Morality, and by Hygiene.—J. A. Doleris, (*La Gyn.*, Nov., 1910) thinks that sexual education will lead young people toward a higher goal, show them early the true significance of life, guide them to a sufficient knowledge of human biology, and inculcate a logical conception of the laws of nature which rule our lives. It is time to put an end to the ignorance, and mystery of sexual matters, derived from religious dogmas, which has been thrown around the highest and most essential function of life, reproduction. The austere morality of religion has accomplished little. There is no desire to lessen the dominance of true love in marriage by education, but to give a true appreciation of the physical and psychical qualities necessary to produce healthy and strong offspring; to substitute this for an idealized romantic sentiment, or a materialistic satisfaction of the sensual element. We must break with a system of education whose worst consequence is to give a false judgment to children, to pervert their imagination, and sometimes even to incite them to vice. The education of the child should begin when he asks the first questions about the differences between the sexes, and the phenomena of generation. It must begin with the parents, but they must first receive instructions which shall enable them to teach the child aright, and make the knowledge correct and natural. To begin the sexual education at sixteen years, of age is too late. Science alone is competent to begin this instruction; teachers must first be taught. For girls, women physicians who are also mothers make the best teachers. Girls are more precocious and more curious than boys in their thoughts about motherhood. They are more apt to ask questions and will not be satisfied with foolish answers. There is no such thing as a natural chastity; the selfcontrol of the young girl is the product of moral heredity and early education in prudence. Educators must receive scientific instruction in sexual matters to fit them for their instruction of children. The program should include natural sciences, morality, hygiene, and pathology. The subject of reproduction must become to the child natural, simple, and moral. Ideas derived from zoology, biology, and botany will aid him in comprehending process. The occurrences of sexual life in flowers, chickens and the domestic animals, should be taught him in a refined manner. They

make it possible for him to comprehend what happens in the human race. As every flower requires fertilization, the idea will become usual to him that the same process is necessary for the human race. The gradual transition of ideas will not shock or offend, but rather interest his mind. With the coming of puberty he must be taught by lessons in physiology and anatomy, to control his sexual instincts. The young girl must be taught how to choose a husband, what are the conditions of a healthy and happy marriage, the nature of gestation, and parturition, and the nourishment and physical education of the child. It must be taught that the function of the genital organs must always have an object, procreation and that they are to be used in no other way. As control is taught the child for hunger, thirst, pain, so control of the sexual instinct is to be taught. The assistance of exercise, manual labor, games, and sports in gaining this control must be learned. Abstinence from alcohol, moderation in the sexual life, unstimulating diet must all be shown to be of benefit. Continence must be inculcated in the young up to a certain age. They must be taught that science and natural laws justify this continence, and that indulgence is not necessary to health. Suitable books should be given to the young on these subjects; the authority of the physician should be exercised; conferences with his teachers, in schools for adults, in professional schools, in the army etc., may all aid in this work. Such an education will ennoble love and the life of the family, it will render it more and more happy.

Sympathetic Pains and Hyperesthesia of the Abdomen.—M. Leoper and Ch. Esmonet (*Gaz. de gyn.*, Dec., 1910) calls attention to the difficulty of differentiating different organic abdominal troubles from those that indicate a simple hyperesthesia of the superficial or deep planes of the abdomen. The authors investigated the condition of sensibility, superficial and deep, of the abdomen. They located the painful zones and the degree of their sensibility to pressure. They confined themselves to the para- or sub-umbilical region. It is here that the most important nerve plexuses are found connected with the innervation of the intestines. The superior mesenteric plexus, almost an integral part of the solar plexus, is a little below and to the right of this region, opposite the second lumbar vertebra, and innervates the jejunum and right part of the colon; the inferior mesenteric plexus, situated on the intervertebral disc of the third or fourth lumbar vertebra, to the left of the spinal column, innervates a large part of the colon; the lumbo-aortic plexus surrounds the aorta down to the promontory; two lateral chains, with four lumbar ganglia are deeply placed in the corresponding flank. The secondary sympathetic plexuses are also situated in this region. Deep palpation shows a tenderness on each side of the umbilicus. The right para-umbilical tender spot has to do with epigas-

tric pain; the left with pain in other structures. They are not present in normal persons, but are especially found in subjects who suffer from intestinal ptosis. The left para-umbilical point is the most important found, especially in enteric cases. These regions correspond to the two sides of the aorta. This pain depends on the condition of the nervous system of the abdomen, and the resistance or tension of the abdominal wall. In persons having intoxications, infections, ptosis, dyspepsia, or enteritis, light pressure brings out this tenderness in the para-umbilical regions. In addition there occur also malaise, anguish, violent inspiration, redness of the face, transpiration, for a moment. Superficial hyperesthesia is absent. The pain irradiates to the intercostal spaces, the clavicular and cervical regions. Aortic pulsation is often noted; modifications of arterial tension, spasm of the esophagus, vertigo, etc., are seen. The causes of this tenderness may be two; intestinal or extra intestinal. They may be mechanical without inflammations. They are particularly frequent in enteroptosis when the intestines drag on their supports. They are generally inflammatory; disturbances of digestive organs, fermentations, dyspepsias, cecal stasis, atony of the bowel, enteritis, infected cancers, all cause irritation of the sympathetic plexuses. A part of the pain is reflex; another part is neuralgic from toxins and microbic products. In some cases it appears as a neurosis without any abdominal disease.

Sacral Anesthesia in Gynecology and Obstetrics.—Hans Schlimwert and Karl Schneider (*Munch. med. Woch.*, Dec. 6, 1910) have made use of this method of anesthesia in 155 obstetrical and gynecological cases. As a result of their experience they recommend its use in the simpler operations of labor and gynecology. The technic is somewhat difficult in fat persons, and in these it is better not to attempt it. The use of this method has not been attended, in the experience of the authors, with any inconveniences. It is recommended in prolapsus operations, repair of the perineum, hemorrhoids, and other operations on the external genitals. In obstetrics it may be used in operations on organs supplied by the sacral plexus, such as forceps, perineum repair, etc. It is advised, combined with scopolamin-morphin sleep in sensitive patients who wish to feel no pain throughout labor. With a sitting position and the use of a 2 per cent. solution the anesthesia lasts about twenty minutes. With a 1 per cent. solution and elevated pelvis anesthesia comes on in from five to fifteen minutes and lasts about one hour; with a 2 per cent. solution its duration is two hours; anesthesia begins in the buttocks and extends forward and backward into the labia and mons veneris. With elevated pelvis it reaches to the navel. In labor the pain of the contractions is removed for about an hour and a quarter, but after that time it returns and either another injection must be given or another anesthetic employed to prevent remembrance of the pain.

Diseases of the Breast.—J. R. Madison (*Med. Press*, March 22, 1911) says that the majority of breast tumors in women under thirty years of age are simple. The majority of breast tumors following shortly after parturition or abortion are due to septic inflammation (abscess). The majority of breast tumors in women over forty are malignant. Tumors of the breast are stronger predisposing causes of cancer than tumors elsewhere, because of the early senile changes which occur in that organ. Pain supervening early in the history of a breast tumor suggests a simple rather than a malignant growth. Puckering of the skin is the most important sign of malignancy in a breast tumor. Multiplicity of growths is a feature in favor of benignancy. A bloody discharge from the nipple, associated with a tumor, suggests a papillomatous cyst. Primary cysts rarely, if ever, occur. Cysts are secondary to other changes in the breast. Considering the frequency with which malignant changes occur in the breast, and the importance of an early diagnosis when most difficult to make, every tumor should be removed and examined. All solid, apparently simple tumors which do not shell readily out of an obvious capsule demand excision of the breast and pectoral fascia.

Virginal Metrorrhagias. A. Siredy and Henri Lemaire (*Rev. de gyn. et de Chir. abd.*, Feb., 1911) says that uterine hemorrhages are not rare in young girls. They occur generally in relation with functional troubles, and without histological changes in the mucosa. Recently hemorrhages have been described connected with a polyglandular syndrome, dependent on vascular alterations of the glands, or an incomplete development of the thyroid and hypophysis and ovarian insufficiency. In these cases there is no true change in the uterine lining, and the hemorrhage is due to circulatory troubles which have their origin in the heart, vaso-motor system, or are reflex from certain toxins. In another group of cases uterine hemorrhages are allied to alterations on the parenchyma of the uterus and ovaries. In neuro-arthritis a part of the trouble is vaso-motor. There is a chronic dystrophy of slow appearance. Other authors describe various alterations in the vessels of the uterus and its parenchyma. In utero-ovarian syphilis there are parenchymatous or vascular alterations of the uterus. Lesions resulting from infections may be present in young girls similar to those of married women. The authors have observed four cases in which persistent hemorrhages had another cause; histological examination of the debris curetted away showed changes in the mucosa, especially glandular proliferation. These were true adenomatous areas. In such cases, even in a very young girl we should not hesitate to perform a curettage.

DEPARTMENT OF PEDIATRICS.

ORIGINAL COMMUNICATIONS.

DELINQUENT CHILDREN FROM A MEDICAL STAND-POINT.*

BY
SIEGFRIED BLOCK, A. M., M. D.,
Brooklyn, N. Y.

THIS subject is so vast and the time allotted to it so short that I can only touch upon a few of the points that will interest the physician, and ask his aid in obtaining official medical examination for these children. For the same reason, I have purposely omitted onerous statistics and the consideration of those cases which on the surface show a low grade of imbecility, syphilitic or tubercular manifestations, etc. In Brooklyn, for more than four years, the benefit of medical examination has been given to children only if the presiding judge of the children's Court has thought that the interests of the child in a particular case before him has made it advisable. It must be borne in mind that the children's court cases, that is, cases of children under sixteen years of age who violate the law, are not looked upon as criminals; they are legally known as delinquents, the idea being that a mistake made by a child is made by only a child's mind, and not by a fully developed reasoning apparatus. Based on this logic, such children are sent to reformatories, where a term does not stamp them as criminals.

At present neither New York State nor New York City *officially* recognizes a medical examiner for these cases. The clamor for funds in the several departments of a large city makes each one lack in some particular, and for that reason medical attention which is imperative comes from outside sources. In Manhattan and the Bronx, the Gerry Society, and in Brooklyn and in Queens, the Probation Association supply this want temporarily, until the city or the state may be in a position to

*Read before the Williamsburg Medical Society, March 13, 1911.

take the matter up. I might mention also as a word of praise for our borough, that not more than three or four other cities in the United States preceded Brooklyn in this work, and even our big borough of Manhattan has only recently gone into the movement. I have received inquiries from most of the large cities as to our methods, and I regret to say that many of these places have now passed us in their efficiency, because the governments of these cities have aided the courts in their work, while we are still pleading for assistance.

To know the attitude of the judges themselves in this matter, I quote the following extract from the Brooklyn Eagle: "In the Children's Court in the First Division, the matter has been under advisement and through the cooperation of the Gerry Society, a special bureau has been established to ascertain if possible, the causes of juvenile delinquency and apply such remedies as seem to be best.

The special committee is composed of the following physicians in this borough, who have given special study to the subject of children's diseases: Drs. J. Sherman Wight, Henry N. Read, E. H. Bartley, Wm. M. Hutchinson, Louis C. Ager, Siegfried Block, and Supt. H. Clay Preston of the Brooklyn Society for the Prevention of Cruelty to Children. The report showed that this committee had numerous meetings during the past two months, and gathered information from other cities on the subject. The conclusions are summed up in the following recommendations:

1. All children remanded from the Juvenile Court should be subjected to a medical examination.
2. This examination should be conducted by a medical man. More than one medical examiner will be needed for the work.
3. Voluntary examinations are undesirable; medical examiners should be paid for their work.
4. The examinations should be made at the building of the Society for the Prevention of Cruelty to Children in a room properly equipped for this purpose.
5. That the Society for the Prevention of Cruelty to Children should be asked to cooperate in this work.
6. That the Department of Health should be asked to cooperate in this work.
7. That there should be a scientific advisory council to the Juvenile Court of at least five members, at least three of whom should be medical men.

8. That this concil should be appointed by the judges of the juvenile court.

9. That the duty of the members of the council should be to recommend examiners and interpret findings of the examiners, and act in an advisory capacity to the court.

10. That the simplest form of examination blank is preferred.

11. That the result of the examination should be handed to the judge of the Children's Court who has the case in consideration for final disposition.

12. The committee is not prepared to answer the general question as to the relation between physical defects and juvenile crime, but if these examinations are systematically carried on they will answer that question in time.

13. That the relation between mental defects and juvenile crime is a fact.

14. That medical examinations must sooner or later be resorted to in every juvenile court and it is time to recognize them as part of the machinery of justice.

The above report was on motion accepted and a vote of thanks was given to the committee."

To shorten a long story the judges are doing all in their power to obtain the necessary aid.

It is roughly estimated that one-fifth of all cases that appear in the children's courts, or about one-half of those who reappear three or more times, are mentally deficient. Mental deficiency and crime are very closely akin and both are on the increase, and both seem to have their maximum number of outbreaks in the neighborhood of fourteen to sixteen years. In another paper I showed that if a curve was drawn representing all cases of crime, first offense, for all ages, and a like curve of the sort, for all kinds of mental deficiency, including insanity, it is remarkable how nearly they correspond; and their highest crests would be at the ages mentioned. "A curve for dementia precox almost exactly follows this one" says Dr. Wey, the late examining physician of the Elmira reformatory. Thus the more we compare the two conditions, the more nearly alike do we find them.

It is important to remember that the place and the time to get the defective child is, if possible, in the school-room before he has appeared in a court. Most sections of the city have schools with special classes which are intended to take care of the backward and feeble-minded children. Miss Farrel,

the superintendent of this department of the school board, sometimes sends me cases to seek the causes of deficiency and to suggest a remedy if there is one. I have been asked to show a few typical ones and shall read one actual blank from the Board of Education, and then show you the case.

January 24, 1911.

"Dr. Block,

Long Island College Hospital.

Dear Sir:—

This child, L. F., is not making normal progress in school. There may be physical conditions which promote the backwardness. If you will advise me of his condition we may be able to modify his school-work and otherwise co-operate with you in effecting a cure.

Very truly,

William H. Maxwell,

City Supt. of Schools."

This case is interesting from many points of view. The mother of these two children is a niece to the father. It is conceded that the chances of degenerate offspring in near-blood intermarriage is three times as great as in normal marriage. The little girl is deaf and dumb, and the boy is defective both physically and mentally. Besides being smaller in size than his brother, two years younger, he is far behind him in school. He has poor eyesight, nephritis, and a very neurotic temperament. Neither parent can be classed as of great vital or mental capacity.

I had expected another case of niece and uncle marrying, with four children, a six-weeks-old baby being blind, a girl of three deaf and dumb, a boy of twelve and another of fourteen, both epileptic and medium-grade imbeciles.

I wish to impress on you that all cases that come to the courts are not abnormal. The largest number are of that class of law-breakers who conflict with those laws necessary for running a large civilized community. Many of us would, if we had been caught throwing snow-balls at an old man, making fires in the streets, breaking a window, or possibly engaging in a petty theft, have been subjects for the children's courts. For classification we can divide the cases into almost

as many divisions as there may be agencies at work to ameliorate the conditions. For example, we can begin with the mildest kind of an ungovernable child brought to the court by a parent who continually finds fault and nags at him. This state of affairs covers a long period, gradually increasing in severity until finally a gross breach exists between the guardian and child. The parent in desperation, the whole affair exaggerated in his mind, applies at the police station for aid, and then the court is forced to take up the matter. From this class of delinquents we can go step by step until we have the worst offenders—who are termed “habitual criminals.”

For our purpose let us consider only the one-fifth, or medical cases. We divide these into two groups:

1. Those physically abnormal.
2. Those functionally, physiologically or psychologically abnormal.

The physical abnormalities have been so much rehearsed in recent literature that I shall pass them quickly. Enlarged tonsils, adenoids, poor eyesight, defective hearing, and malnutrition head the list. We all know the dire results accompanying these conditions. I shall show you one of a large number of cases of partial deafness to emphasize this point. The balance of the cases I will show you answer the Binet tests as “nervous.” These are the highest class of feeble-minded cases. It is estimated that one out of three hundred of the ordinary population can be classed with this group.

W. G., aged fourteen, has very often played truant from school. His mother, a widow, complained that the boy did not obey her at all. Somehow the truant officer did not get hold of the boy. He was in a special class and was declared mentally deficient by the school inspector. Miss Farrel sent him to me. From conversation with the boy, I could hardly realize that he was abnormal. In mathematics he displayed average ability in written work but failed completely in oral to do the work of a child many years younger. I wanted to see his penmanship and asked him to write: “The sheep upon the hill.” He wrote “The ship upon the heel, and asked me whether I meant “keel” instead of “heel.” Some time previously this boy had his tonsils and adenoids removed. Yet no one found he was hard enough of hearing to make school progress impossible. His ears were full of inspissated wax. This was removed and great improvement followed,

although a chronic middle ear catarrh makes absolute cure impossible. This case is shown only as an example of what defective hearing can do.

Now this boy, in a teacher's lengthy explanation, would soon lose the thread of thought, and, not being of wood, he would either get tired and fall asleep, or become restless and annoy other boys with the many school antics. The frequent friction with the teacher which this occasioned caused him first to dislike and finally to hate her. She had similar feelings toward the boy, and he finally abhorred the school to such a degree that he would not go any more. He had to hide to escape the truant officer, and where did he go? To some dark cellar, moving picture show, saloon, or what not, at any rate, he went where he found others doing just what he was—congenial company. Should we then wonder if this boy is brought to court for a crime? He has been helped some and may be benefited more by prolonged treatment. There are hundreds of cases exactly like his. Poor eyesight, faulty environment, malnutrition may all have comparative histories, but the brevity of the paper obliges me to omit them. It is not hard to appreciate that failure to see the board clearly and distinctly, losing the thread of the explanation, will result in defect similar to this one.

Similar results are due to a hungry stomach, causing a starved brain to fatigue easily, or lungs which have not been properly aerated, from enlarged tonsils, adenoids, nasal spurs, tuberculosis, etc., leaving the brain improperly supplied with good red blood. The many possible causes for distraction of attention, as the constant irritation of an adherent prepuce, etc., all draw the mind from the subject at hand and make prolonged mental work extremely difficult.

Under the head of physical abnormalities also must be classed macro- and microcephalus and the many other misshapen heads, a few of the choreas, epilepsies, paralyses, cretinisms, and combinations of these, as deaf mutism, etc. If any of these can be remedied by known medical or surgical measures, it goes without saying they certainly should be. It is almost marvelous to observe the results of 5 gr. of thyroid extract, t. i. d., on some cases after a few weeks. For further study of the physical abnormalities of criminal children, the works of Lombroso, Garfallo, McDonald, Ferri, Ellis, Kraepelin are especially recommended.

By the functional, physiological, and psychical division is meant that class of cases who appear normal in every way and

have none of the so-called stigmata of degeneration present. In these the causes of deficiency may lie in the nuclei or association tracts of the brain. For example, color-blindness; or there are the psychically wrong, *i.e.*, they simply think wrong, somewhat like hysterics. For the present, the examiner must accept most of these conditions without further exactness of diagnosis. A few of these can be benefited by such treatment as the psycho-analytic method of Freud, hypnotism, after an installation of a new way of looking at things, or, as in physical cases, the physical environment is changed, so here we may change the mental environment and give the individual new ideas of life.

To illustrate the condition with a case which I showed a couple of weeks ago before another society. The boy lived in Cook Street, a block from P. S. No. 144, but played truant most of the time. He learned to know a wicked lot of hoodlums, who sold stolen property. It is perhaps not a waste of time to relate some of the evil tactics of this gang, who, I am sure, cause the down-fall of many a young boy. They are outcasts of society, thirty-five to forty in number, not children by any means, twenty-five to thirty years of age. They sleep in a stable on the straw and hay. On Saturdays and Sundays they steal from the farms on Long Island what they peddle the rest of the week, on wagons which they hire for fifty cents per day from the proprietor of the stable. If a little boy of the neighborhood has any particular enemy, one of these big ruffians will thoroughly beat the enemy, no matter how small he may be, for the price of a cigarette or penny. One day this boy's mother telephoned to me to call at once. I was very busy and did not get there until the next day. I found the boy in bed full of bruises as the result of thrashing at the hands of one of these hoodlums.

To return to the cause of this boy's misfortune. As I stated, he did not want to attend P. S. No. 144, no inducement could move him to go. After dozens of trials I found the cause to be simply: "He didn't like the benches." This peculiar reasoning seemed to him to justify his staying home, despite every kind of persuasion. For the preceding five years when the family had lived in another neighborhood he had attended with good record P. S. No. 33. The matter was taken up with the school authorities and he was transferred to No. 33, ten blocks away. Thereafter his daily reports showed he was a good pupil and never even once played truant. For six months he has had

working papers, and did not necessity compel him to work he would be still attending the school. He says he likes the school.

Another case of a peculiar minded boy is that of a boy who would do anything for money, steal, lie, anything. Recently he stole \$40 from a servant girl. I shall not burden you with the details; suffice it to say, his mother was insane and committed suicide, and his father is a get-rich-quick parvenue and a miser in the extreme. The boy's consuming desire was to hoard money. A paternal uncle and his wife were also wealthy misers. Thus the inherited family characteristics, modified by the temptations of environment, have made this boy a criminal. He had a bad habit, if you will. Adolf Meyer, in defining the origin of dementia precox, says in substance, "often bad habits uncorrected implant themselves in the individual so as to become an inherent part of him. Soon they are no more bad habits but an every-day fact—an ordinary thing in his or her life—with a result that the person becomes alienated from society and a real case of dementia precox is established. It is only three years since I first saw this boy when he was discharged from the Brooklyn Disciplinary School. To-day he is a candidate for the State Hospital with a well developed, very easily recognizable dementia precox. I tried, but was unable to get hold of him to come here to-night.

The equivalent of epilepsy, which we well know may take any form, often takes the guise of crime. The individual behaves nicely, and frequently, from no apparent cause, instead of getting the regular fit, commits a grave offense, somewhat as the periodic drunkard goes on a spree.

The next case I wish to present is that of a boy who, you will agree, shows no signs of degeneracy. He is fifteen years of age, very bright in his school work, and is capable of conducting a conversation much more intelligently than most boys of his age. He is subject to periodic attacks when he is beyond control, attempts suicide, and at these times refuses absolutely to do anything that his parents may reasonably expect. His home is excellent, and his people are cultured; money is no object could that means help him to improve. Between the attacks there is not the slightest suggestion of evil; in fact, I don't think I exaggerate when I say he is better than the average boy. Restricted diet and bromides have increased the intervals between the attacks. The last occurred about

two weeks ago. At this time he refused to eat for a few days. Constipation seems to bring on the attack.

The next case is about the same. He was so vicious and unbearable during the attacks that he was first recommended to a reformatory, then he spent ten weeks in an institution for the feeble minded, and now he will have to go to Craig Colony. These are not ordinary bad boys. The first one is really a good boy with a vicious epilepsy.

The next case is a sexual pervert. This case is of interest especially because the boy is only twelve years of age and developed as fully sexually as a grown man. Sodomy in all shapes and forms is his specialty. He was originally referred to me by the superintendent of schools as mentally deficient, backward in school, with no discernible cause. It seems as if the brain has not properly developed and, as in so many of these cases, the spinal cord activities are less inhibited, reflexes become exaggerated, and the sexual function, a spinal action for the most part, is frequently, as here, hyperactive. I am trying nerve sedatives, so far it is hard to tell with what result. For the protection of other children it has been advised to keep the boy from school.

Hysteria may occur in children as well as in adults. I have seen many of these cases at the clinics and in private practice. One case may interest you. This boy's hysterical attacks have kept him from school. Every manifestation of tic to a genuine aphonia has been present. At present he has a hiccough and tremors of both legs. When hypnotized or asleep these symptoms entirely disappear.

There is one further matter of great importance to which I would call your attention. In the past year, public sentiment has been aroused against "medical expert testimony." Gentlemen, this is a little foreign to this paper, but I wish to relate the case of a tall handsome boy of seventeen, who has an excellent head, except that he "thinks" wrong. He is accused of arson and is in the Raymond Street jail. His verbatim definition of crime is: "Doing something against the law." He is thoroughly honest and fully appreciates his plight. He set fires in eight places in twenty days. He says that after he had set a fire, he would walk around the block, then go through the house and arouse all the tenants to avoid harm. Asked his purpose, he says, "I want to be a hero, I wanted to save some one and get my name and picture in all the papers."

This case was declared *legally* sane, as knowing the nature and quality of his act and knowing the act is wrong. Is he medically sane?

Having touched briefly on a few of the points which show existing conditions, and which call for the attention of the physician, you can realize that his aid would be of great service:

1. In explaining the results of the deficiency to parents.
2. In preventing injudicious marriages when possible.
3. In educating the public to discuss, at least, the matter of castration of degenerates, thus minimizing the danger of an unhealthy burden on the community. Most authorities agree on this point, but not all.
4. In delving more deeply than heretofore into family histories, which often alone determine the diagnosis.
5. By recognizing the fact that many traits of character are hereditary and that these are modified by individual environment. There are many criminal, drunkard, epileptic, or insane family trees.
6. By enlightening the public regarding medical expert opinion.
7. By urging that the laws relating to insanity should be under the supervision of physicians.
8. In correcting physical defects. Removing enlarging tonsils, adenoids, and nasal spurs. Putting glasses on weak eyes, syringing waxy ears, giving iron, arsenic, bromides, and thyroid in the thousands of cases now craving for it. Then one in three hundred will not be mentally deficient.
9. By joining the "big brother" movement and thus making a practical effort in a single case. We only ask each "big brother" (or big sister) to take care of one child of his or her sex and religion.

Finally, as a whole evening may be profitably devoted to the consideration of any one of these topics, I ask your pardon for this very superficial skeleton of these few phases of our work which are of medical interest. As I said at the outset, this subject is much too vast for a single paper.

ATYPICAL ABERRATED CHILDREN.*

BY

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"BEWARE of the man with a cast in his eye, a defect in his speech and a hitch in his walk" is one of those terse sayings which the people hand down from generation to generation and which contain the result of long observation. It is a saying of the common folk expressing the well-established relation between physical and mental characteristics. It recognizes the fact that there are certain outward deviations from the normal physical features corresponding to or associated with deviations from the normal mental development. The phrenologists have made a minute study of this relation of the outward form to the mental traits and have perhaps carried it beyond the legitimate deductions, but they have drawn our attention strongly to this relation. The neurologists have also called attention to certain deformities of the external organs which they regard as signs of degeneracy from the normal type of human being.

These stigmata of degeneration are, of course, congenital, as are the mental qualities with which they are associated. We thus find among the young various degrees of atypical subjects, physical, nervous and mental defectives, or in some way aberrated. When overdeveloped in certain directions, we designate them prodigies, or geniuses, as musical, mathematical, or artistic prodigies. With these overdeveloped children we are not especially concerned.

It is the atypically underdeveloped children who require our aid, and who are, therefore, of more interest to us.

The objects of our concern and our compassion are the mentally deficient or mentally aberrated children; those who are so atypical as to make them subjects of special care, and of special educational methods. It is an unfortunate fact that the atypical child so often tends toward the reversion to the lower or animal type. He often shows very early a tendency to the animal passions and a lack of self-control which allows him to drift into habits or practices of a criminal character. It is stated

* Read before the Williamsburg Medical Society, March 13, 1911.

by good authorities that degeneracy is increasing among American children. This is attributed to the strenuous life of the average American, lust for wealth, desire for social station, ambition for fame, late hours, lack of rest, excitement, the consumption of alcohol—especially by women—these all tend to generate a widespread neuropathy which is followed by degeneracy in the children or by an abnormal development of the nervous system. We should remember that the border-line between the precocity of genius and insanity is very narrow.

A feeble-minded child is one who is incapable of competing on equal terms with the normal child or of managing himself with prudence. Imbecility denotes a condition of greater helplessness than feeble-mindedness. Idiocy is applied to cases of complete lack of intelligence.

Dementia denotes a loss of mental powers once established. We may classify the mental defectives as follows:

1. The feeble-minded.
2. The imbecile.
3. The moral imbecile.
4. Mentally defective epileptics.
5. Cretins or myxedematous idiots.
6. Idiots.
7. The paretics.
8. The insane children, including the maniac, the hypochondriac, the melancholic, the paranoic, etc.

Dr. Francis Warner conducted a scientific inquiry in England and Wales in 1888 to 1894 into the co-relation between physical defects and mental deficiency in about 100,000 children of school age. Of these he found 18,127 who presented obvious physical defects. These he classified into

1. Defects in development, such as abnormalities in cranium, in the external ear, eyelids, palate, nasal bones, and stature, 9,777 cases.
2. Abnormal nerve signs such as defect in general balance, overacting frontals, corrugations of forehead, defective eye movements, finger twitchings, defective balance of the head, lordosis, deafness, defective speech, slow response, etc., 10,355 cases.
3. Low nutrition in 3,522 cases, who were pale, thin, or delicate.
4. Mentally dull, reported by teachers, 7,391 cases.
5. Obvious eye defects were noted in 2,929 cases.
6. Rickets in 244 cases.

Seven thousand eight hundred and eighty-one were registered

as exceptional, of which two were idiots, fifty-one imbeciles, 275 were feeble-minded, 110 were epileptics, five deaf mutes, and 374 were maimed, crippled and paralytics.

Tables were published showing the coincidence of physical defects and mental characteristics.

Of the cases which presented at least two of these physical defects, 45.7 per cent. were reported by the teachers as mentally dull, 31 per cent. suffered with low nutrition, and 60.3 per cent. showed abnormal nerve signs. About 1.2 per cent. of those examined were mentally defective. All those examined were sufficiently atypical to require special educational treatment. A still more extensive inquiry conducted in Switzerland showed 1.5 per cent. of the school children as feeble-minded.

If the same proportion prevails in New York City as in England, we must have among the school population about 7,000 atypical or mentally defective children and those who should receive special educational treatment, who are the subjects of congenital or developmental defects which are more or less permanent.

But there is a much larger number, about 18,500, of those who are classed as cases of mental dullness, defective nutrition, and those showing abnormal nerve signs, which may be regarded as somewhat temporary and which can be improved or cured by appropriate care and training. To this should be added a large number of children under school age who are defectives.

In a study of the biographies of criminals published by Dr. J. S. Christison, in his book on *Crime and Criminals*, 1897, it is observed that a lack of parental care finds a very prominent place in the most of them. Next to this in importance is an inherited neurotic tendency. Dr. W. A. Potts (*Lancet*, October 29, 1904, p. 1210) found of 862 young people found in night shelters, *i.e.*, homeless and wayward young people, 11 per cent. were mentally and morally defective.

He concludes that the principal causes of feeble mindedness are:

1. Defective nutrition in early life.
2. Hereditary tendency to consumption.
3. Descent from insane or criminal stock.
4. Chronic alcoholism of one or both parents.

He remarks that almost all the immoral cases were descended from criminal, insane or alcoholic parents.

If these conclusions are correct heredity plays a very important

part in the production of these unfortunates. Defective nutrition may be in many cases within our control.

Mental dullness and abnormal nerve signs may be temporary in character and may, by proper care, be greatly benefited.

We have called attention to the influence of the lack of early parental control in the development of the criminal. We may also call attention to the fact that in England the number of mental defectives in the manufacturing towns was about twice that of the rural districts, which is probably due to the lack of attention given to the early nutrition of the children in the factory towns, and to the fact that the mothers often work in the mills during pregnancy.

We have here a group of etiological factors in the production of atypical or defective children worth more than a mere mention, viz., poor nutrition, overworked and underfed mothers, neglect in early parental care, and alcoholism.

I have elsewhere (*Pediatrics*, February, 1910) called attention to the influence of gastrointestinal infections in causing disturbances in the nervous system leading to neurasthenic symptoms of grave character. The more I study such cases the more I am convinced that chronic intestinal infections play a most important rôle in producing mental as well as nervous instability. Herter cites a case of which he says: "I believe this case to be a clearly defined and unimpeachable instance of epilepsy developing as a result of cerebral irritative intoxication from putrefactive products absorbed from the intestine." Chorea has for a long time been considered by some authors as of intestinal origin. I have seen two cases which were to my mind clearly cases of intestinal origin.

Combe says the intoxicated, particularly in childhood, present all the symptoms of cerebral hyperesthesia. "The mental symptoms are those of sadness, fatigue, irresolution, depression, multiple phobias, and particularly of nosophobia." Such a condition when continued for some time causes such a change in disposition as to amount to hypochondriasis or melancholia.

Such children are intractable, and when improperly governed by a nervous unsteady mother may easily become mentally unbalanced. Such children frequently develop a strong tendency to be rebellious to parental authority, run away from home and become criminals. I cannot lay too much stress on the importance of early correcting of such conditions, especially in all atypical children.

Alcoholism in fathers and mothers is difficult to control. We should, however, lose no opportunity to let it be known that such a danger to the offspring of alcoholic parents really exists. The time may come when alcoholism may be a crime against the law as it now is, in the present discussion, a crime against humanity. There is already a practice in some of the states of limited castration of criminals to prevent procreation of their kind. It is doubtful if this practice will ever be generally adopted.

65 SOUTH PORTLAND AVENUE.

ABDOMINAL RHEUMATISM.

REPORT OF THREE CASES.

BY

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THAT an acute rheumatic fever in children may have as its first manifestation the involvement of the abdominal musculature there can be no doubt. However, in the determination of rheumatism as the only factor in the etiology of the pain, there is a very considerable difficulty. First, we must eliminate the normal sensitiveness which is an idiosyncrasy with some children. While it is not common, at the same time it is not infrequent that we find the wall of the abdomen hyperesthetic, but hyperesthesia of the abdominal wall is almost invariably associated with a similar condition of the inner aspect of the thighs. Absence in this situation would lead one to suspect its absence in the abdomen. When such hyperesthesia is present it is spread over a somewhat considerable area extending well up over the chest. The hyperesthesia is confined to the skin and does not affect the muscles.

Second, we must differentiate those pains which are due entirely to muscular overexertion or exposure to cold, straining from violent coughing, unusual exercises involving the abdominal musculature. In all such cases pain is localized quite strictly to the recti muscles if the active cause is a mild one. Appreciating the possibilities of mistake and taking every precaution to avoid them, the writer wishes to briefly report the following cases of what might properly be termed "abdominal rheumatism." I use the term "abdominal rheumatism" to emphasize the clinical fact, although I am fully aware that the disease

is the same whether it affects joints, muscle or gland, or exhibits its more common manifestations in an indefinite symptomatology. As we commonly speak of rheumatic erythema, rheumatic heart, etc., we are also justified in speaking of rheumatism of the abdomen when that situation is the initial and chief point of the clinical manifestations of the immediate attack.

CASE I.—Female, aged six years. Rheumatic history in both parents. Previous diseases, pertussis and measles.

Previous History.—Had suffered from vague muscular pains for the past two years. Had throughout life suffered from occasional attacks of bronchitis; sometimes these attacks were accompanied by a mild erythema which occasioned no distress. She had been persistently anemic for months past. She was chronically constipated. The child had had three distinct attacks of gastric disturbance with headache and vomiting, but with no assignable digestive cause; one of these was accompanied by an erythematous rash.

When first seen she had severe general abdominal pain and would not tolerate pressure or manipulation. There was no pain in any other part of the body. Temperature 100.4, pulse 93, respiration 21. It was the muscle and not the skin that was painful.

Examination of the heart revealed an acute dilatation of the left ventricle with weak impulse and accentuated pulmonary second sound. There were nodules in the lobes of both ears. By the association of symptoms and the exclusion of all other causes, a diagnosis of abdominal rheumatism was made. The symptoms cleared up in less than seventy-two hours under the salicylates and rheumatic precautions. The temperature never went higher than that recorded at the first examination.

Three months later she developed another attack with marked arthritic involvement of several joints, the development of numerous nodules throughout the body and an endocarditis. The erythema at this time was very marked. The parents admitted that shortly after the first attack they had allowed her to return to a full diet and took no further precautions to prevent a return of her disease.

CASE II.—Male, aged ten. Rheumatic history in one parent. Previous diseases none.

Previous History.—Occasional vague muscular pain. Frequent attacks of tonsillitis and occasional attacks of gastralgia. He was anemic, mal-nourished and habitually constipated. When first seen his temperature was 101.5, pulse 87, respiration 19. He complained of very severe abdominal pain, which pain extended well up over the chest in front. Any motion or pressure caused real suffering. He complained also of pain in the right elbow and left fingers. Examination of the heart revealed acute dilatation of the left ventricle with slightly weakened heart action but no evidence of inflammatory change. Diagnosis

was made of abdominal rheumatism and antirheumatic régime and diplosal administered. Within twenty-four hours all the symptoms had improved except the heart and the temperature became normal and stayed so. Within forty-eight hours all pain had disappeared. The acute dilatation of the heart and its weakened action is steadily improving under the diplosal and absolute rest of mind and body.

CASE III.—Male, aged seven years. Rheumatic history in one parent. Previous disease, intermittent fever four years ago and semiannual attacks of otitis media for the past three years. Three years ago suffered an attack of rheumatism with acute and marked articular symptoms. He has also complained occasionally of vague muscular pains lasting but a few hours. Has been subject to frequent attacks of tonsillitis and also bronchitis. Has been persistently anemic and malnourished. When first seen his temperature was 100, pulse 95, respiration 22. He was having persistent vomiting and severe general abdominal pain. Manipulation was not tolerated. The tongue was clean and the bowels active. He had no pain anywhere but in the abdomen, except that he complained occasionally of pain in both ears.

Examination of his heart revealed slight dilatation with weakened impulse and mitral systolic murmur. The question of diagnosis was held in abeyance but as the probability of abdominal rheumatism was strong, antirheumatic treatment was instituted and within twenty-four hours the vomiting ceased, abdominal pain was markedly diminished, the heart action better and the child more comfortable with a temperature of 99.3° F. Four days later both ear-drums were incised by Dr. B., and considerable serum evacuated. Under an antirheumatic régime and diplosal the boy is making a rapid and uncomplicated recovery.

Rheumatism has been unusually prevalent during the past winter, so much so that it has been practically epidemic. The symptomatology also has been unusual and marked in its indefiniteness, but despite these unusual features and indefiniteness the efficacy of treatment and management has proven the etiology of the clinical manifestations.

One possibility that was always kept in mind in the diagnosis of these cases was influenza; and the occurrence of the double otitis media in Case III would strongly indicate such a factor if it was not for the fact that the boy had already experienced the semi-annual attacks as stated.

In no instance was there the presence of cases of influenza in the house either preceding or following these reported cases.

We are aware that despite the varying types which influenza takes, the temperature in children follows a fairly constant course; that is, a sharp sudden rise to a considerable height, with a decline within twenty-four hours and a persistency at a

much lowered point (100° F. or so) for several days. The pulse at the same time is unduly rapid. Such a course of pulse and temperature was entirely lacking in these instances.

Of the different types of influenza, it is only the gastroenteric and more rarely the nervous type that exhibit the symptom of abdominal distress.

In the former type, the pain is colicky and not constant and simulates that which occurs with an acute gastroenteric catarrh. In the nervous type, it may closely simulate the muscular pain which we observed in these cases and may be of practically the same character, but associated with the pain there are the invariably present nervous phenomena which clearly distinguish the cause.

Pfeiffer's bacillus was sought in Cases I and II, but not found, but the great difficulty encountered in isolating this bacillus must be taken into account also.

42 GATES AVENUE.

A STUDY OF INFANT MORTALITY.¹

BY

I. J. HILL, M. D.,
New York City.

A DECADE or more ago, depopulation became a question of such interest in France that it began to be called the national problem. A campaign of investigation of the social questions concerned in insufficient procreation was followed by a wave of intense study in medical circles on the question of infant mortality.

During the past few years, America has become aroused by startling statistics on deaths in early infancy, and we are justified in saying that infant mortality is the question of the hour.

From the view-point of the obstetrician, the life of the infant and its safeguarding begins with the commencement of pregnancy. Loss of early life may be classified as:

1. Premature expulsion of the nonviable ovum. That is, abortion and miscarriage.
2. Intrauterine death of a viable fetus.

¹ Presented at the Twenty-ninth Annual meeting of the American Association of Obstetricians and Gynecologists.

3. Death during labor of a full-term fetus or viable premature fetus.

4. Death in the days immediately following labor from influences acting during its intrauterine life or from the effect of injury during the act of labor.

5. Death during the first year from other causes.

For the first class, premature delivery of a nonviable fetus, reliable statistics are difficult to obtain. The records of public maternity institutions give figures less than the actual occurrence. For uncomplicated miscarriage, many women do not seek the assistance of a maternity service, to which they would apply for attendance for delivery at term.

We inquired, however, into the histories of 680 women recently under our care as to the occurrence of premature expulsions in previous confinements. We found that in 2799 pregnancies there had been a loss of 7 per cent. from premature loss of the fetus.

I am presenting statistics which were obtained from the service of a free maternity clinic which I conduct. In these we shall speak of abortion, miscarriage, premature labor and still-birth as "unsuccessful pregnancy."

We made a study of the histories of a number of women each of whom had a baby under the care of our pediatric department, with a view to determine the relationship between the number of pregnancies and failure. As each woman had at least one successful pregnancy, our record of their unsuccessful pregnancies does not include any of primiparæ.

RATE OF UNSUCCESSFUL PREGNANCIES BY NUMBER OF PREGNANCIES (per 1,000).

Number of pregnancies of women.	Total number of pregnancies.	Number of miscarriages, etc.	Rate in total number of pregnancies.
2	252	12	48
3	333	17	51
4	453	37	86
5	380	46	121
6	366	33	90
7	287	33	115
8	264	35	132

We find a general tendency to more frequent miscarriage as the number of pregnancies increases.

We investigated the question of the bearing of the mother's age at the beginning of her child-bearing upon the success or failure of her pregnancies.

UNSUCCESSFUL PREGNANCIES IN RELATION TO MOTHER'S AGE
AT FIRST CONFINEMENT.

At first confinement mother was	Number of pregnancies	Number of mis- carriages, etc.	Rate of miscar- riages, etc.
18 years or under.	438	51	116
19 to 21 years.	1,089	87	80
22 to 25 years.	967	88	91
26 to 30 years.	214	14	66

It is noticeable that the rate of miscarriage, etc., is less progressively with the maturity of the women at the first pregnancy up to the period of twenty-six to thirty years.

As our patients comprise in addition to a number of Americans a large proportion of foreigners, we were able to make a comparison between the respective rates of unsuccessful pregnancy.

UNSUCCESSFUL PREGNANCY WITH REFERENCE TO
NATIVITY OF PARENTS.

	Number of pregnancies	Number of mis- carriages, etc.	Rate of mis- carriages, etc.
Both parents native Americans.	339	50	148
Both parents foreign	1,623	106	65

This disparity in favor of the foreigners is of startling interest. It might at first glance suggest some racial disadvantage in the bringing forth of children. We made a further investigation with reference to the question of how far these women were advanced in the knowledge of matters of health and hygiene.

Our visitor saw each one of these women and after an interview in which these matters were brought out rated them as to their knowledge of hygiene, etc., on a scale of 100, 0-25 being the lowest classification.

The figures showing the rate of miscarriages, etc., follow:

UNSUCCESSFUL PREGNANCY IN RELATION TO GENERAL INTELLIGENCE AND KNOWLEDGE OF HYGIENE.

RATING OF INTELLIGENCE.

	0-25	25-50	50-75	75-100
Number of cases.....	24	351	237	67
Number of pregnancies.....	94	1,458	927	256
Number of miscarriages, etc.....	7	109	37	46
Rate of miscarriages, etc.....	74	75	98	180

We find on analysis that as the standard of education in matters of hygiene increases, the number of unsuccessful pregnancies increases. We had other statistics which showed that these women who had superior intelligence also had better housing conditions, better food, etc. In fact, they were living under better conditions as to all the elements that promote normal full-term pregnancy. Even considering the possible existence of greater frequency of diseases predisposing to miscarriage, we are obliged to reason from such figures that these more sophisticated women had, in greater proportion, taken measures to avoid the responsibility of additional maternity.

We have considered the question of unsuccessful pregnancy so far chiefly in its social phases. We shall not here discuss the measures which might improve these conditions. Let us briefly review the various classes of failure from an obstetrical viewpoint and consider remedies. Abortion and miscarriage are caused chiefly by: displacements of the uterus, endometritis, toxemia, nephritis, endocarditis, anemia, debility and the infectious diseases. These conditions also operate to produce our second class—the death in utero of a viable fetus. Torsion of the cord, accidental hemorrhage, hydramnios and eclampsia are also frequent causes of death of the fetus.

Many of these factors would be beyond our control even if we were in charge of the cases from the beginning of pregnancy.

There is, however, a great deal that early observation and care would enable us to do. Specific medication, rest in bed for those in whom previous uterine diseases predispose to interruption, dietetics and the regulation of physical activities are measures within our command which would prove effective in many cases.

Still-birth may comprise the birth of a premature fetus of viable age which has expired in utero, and the delivery of a fetus,

at term or before, so enfeebled from previous disease that it expires from the result of forces acting on it during an ordinary delivery.

There is a large class, however, of vigorous full-term children who die during labor directly as a result of it. In 4,300 cases of labor occurring in our clinic up to November of this year, there were 122 still-births or 3 per cent., but this included prematurity, syphilis and monstrosities. Schultze sets at 2 per cent. the number of vigorous, full-term children still born through the forces of labor.

The consideration of the reduction of mortality among this class is as broad as the whole subject of practical obstetrics which is directed to the safe delivery of mother and child. Among the causes of death of the fetus in labor are compression of the brain, cerebral hemorrhage and asphyxia. Avoiding these causes means wisdom and skill in the practice of obstetrics. It means judgment in deciding at what time to interfere; being masterfully inactive as long as the natural forces are progressive surely even if slowly to delivery without causing too much strain on the vitality of the child, being quick to act with due consideration for the mother's welfare when the prolonged but ineffectual efforts produce symptoms of failing strength of the child. It presupposes a scientific forethought that does not allow a situation to develop where futile attempts are being made at delivery by the natural ways of a child which is too large to pass without fatal injury through the pelvis. It means the wisest choice of the method of delivery, the skillful use of the method of choice.

We can lower the frequency of still-birth before labor by guiding the woman in the hygiene of pregnancy, by correction of malpositions and by choosing a feasible method of artificial delivery in cases of disproportion between fetus and pelvis.

During labor we must constantly watch the condition of the fetal heart-beat as the guide to the effects of a long or severe labor. We must consider the effect on the child of anesthetics. The attendant moreover must consider the child's life when brought face to face with his limitations in cases of complicated or difficult labor.

Midwives, if they are allowed to practise, must be made to call physicians in difficult cases before the child's chances are irreparably lost. The physician of limited experience must recognize obstetrical difficulties before the child is irretrievably lost.

Under the subject of still-birth is included cases of asphyxia

or apparent death which proceed to real death directly or after temporary reanimation. There are many methods of treatment. An effective plan of procedure must comprehend the following principles:

1. The accoucheur should be prepared for this emergency and have in readiness, at the time of birth, the hot-water bath and other agents to be employed.
2. Satisfactory removal of matter from the respiratory tract should precede efforts at artificial respiration.
3. The operator should institute at once in a profound case, one of the most effective methods of resuscitation rather than beginning with relatively impotent measures and losing time in which the state of narcosis deepens so that even the powerful methods can no longer succeed.
4. He should continue his efforts until after the heart has failed to be heard.

5. The resuscitated child should be kept specially warm and watched for lapses of breathing and for collapse.

Our subject includes infants dying in the first few hours, days or weeks after labor of two classes:

1. Those which rapidly decline or succumb to a slight exciting cause, because of conditions beginning in uterine life.
2. Those dying in the same way as the result of injury during the act of labor.

The causes producing death in the uterus may also produce weaklings. Therefore, the same hygiene, medical treatment and regulation which we suggested as a prophylactic against death in the uterus will be of value in preventing weakness at birth.

The same routine which guards against still-birth guards against weakness at birth from violence during labor.

For all the general classes of waste of early life which we have considered, from expulsion of the beginning fetus to loss of the child in the first weeks of life, there is an opportunity of some reduction by good care.

Whatever social questions may be raised in the matter, whether, in the case of the poor individual, charity or the state should supply means of providing good care during pregnancy, it is the physician who must directly bestow it. Every woman who is to become a mother should have the care of a qualified physician from the beginning of pregnancy. It should comprise:

1. Frequent physical examination, including laboratory ex-

amination with special reference to the discovery of evidences of syphilis, heart and kidney disease, toxemia, etc. Measurement of the pelvis and diagnosis of the position and probable size of the child.

2. Treatment of any abnormal conditions by medicine, diet, rest in bed, etc. Application of support for pendulous abdomen, correction of malpositions by external manipulation and support.

3. Careful inquiry into the conditions of living, the household conditions, air, light, food, exercise and amount of work done.

4. Correction of errors in hygiene. Securing of relief if necessary to provide proper food, clothing and abstinence from arduous labor during last three months of pregnancy. Regulation of the food taken and prohibition of the use of alcohol.

5. Education of the woman as to the necessity for her to nurse her child when born and preliminary care of the breasts to secure good conditions for breast-feeding.

6. The selection of a suitable place for confinement and if at the home of the patient, the providing of all the materials that will be necessary for scientific obstetrical care.

7. Immediate response to a labor call by attendant. Attendance continuous enough to furnish treatment for complications. Summoning specially trained obstetricians for any condition that might go beyond the resources of the attendant as soon as they are recognized.

8. The after-care by a trained nurse of weakling infants or those subjected to unusual violence during labor.

The fifth division of our classification of early loss of life, "Death during the first year from other causes," belongs to pediatrics rather than obstetrics. There is a duty, however, that belongs to us as physicians and men, to do what is at our door in the saving life, and the obstetrician particularly in institutional work is in a position to reach a great field either directly or through pediatricians by cooperating with them.

For ten years I have been conducting a free maternity clinic which furnishes care at the homes of the patients. Though early in the development of this clinic, we made efforts to look after the welfare of the infants after labor; for nearly eight years we followed the usual routine of obstetrical institutions, procuring our results in infant salvage chiefly by trying to provide good obstetrical care during the labor and puerperium. We gave the mothers advice as to their personal hygiene at the time of the

antepartum examination and we encouraged them to consult us during the early months of the infant's life whenever they saw fit.

In the fall of 1908 my attention was called to an investigation made by the Association for the Improvement of the Condition of the Poor, showing that among the twenty-six maternity institutions in the city practically nothing more than furnishing good obstetrical care was being done to lower the mortality among the infants delivered in the services. That is to say, after the women were discharged at about two weeks the baby was also lost from view.

An enormous infant mortality was shown to exist among the classes that charity obstetrical services were reaching for maternity work.

It has always been the cry of the various pediatric clinics and milk depots that they do not have the babies from birth. Infants are brought to them for supervision of feeding after some months of irrational care has prejudiced the prospects of successful rearing.

We resolved to meet this issue in as far as the infants born in our service were concerned. We established a pediatric service and department of prenatal work. From that time we took actual care of the pregnant women as soon as they came to us and undertook to supervise their hygiene so as to bring them to the time of labor in good condition to have healthy offspring. In addition to a work of social relief, securing better living conditions, etc., and the abandonment of ill-advised physical activities, we inculcated these women with the idea that they must nurse their expected babies. We gave special attention to the breasts and nipples.

The pediatric department which was organized by Dr. Herman Schwarz undertook in addition to a certain part of the prenatal work the care of the new-born babe from birth throughout the entire first year of life.

I shall not go into a detailed description of this work. Four pediatric clinics a week are held for examination and supervision of the babies. During the hot months all day on every day doctors and nurses were on hand to advise in cases of intestinal trouble.

Visiting nurses go to the homes of the patients to see babies too young or too sick to be brought to the clinic and to keep in touch with mothers who neglect to bring the babies to the clinic.

A social visitor makes visits to investigate cases of destitution, bad hygiene, etc., and arrange for relief.

Milk is furnished to certain cases of bottle-feeding; but the greatest effort of the clinic is in the matter of establishing breast-feeding. It is so apparent from statistics that an enormous proportion of the great summer loss of infants is among the bottle-fed that a ratio of life-saving can almost be assumed as the ratio of increase in substituting of breast- for bottle-feeding.

The following table shows some of the gains of the clinic in this respect:

Of forty women who nursed the previous child 0 months:

Ten of them under clinic supervision nursed 8 months.

Nine of them under clinic supervision nursed 6 months.

Five of them under clinic supervision nursed five months.

Four of them under clinic supervision nursed four months.

Nine of them under clinic supervision nursed three months.

Four of them under clinic supervision nursed two months.

Three of them under clinic supervision nursed one month.

Of twenty-four women who nursed the previous child one month:

Two of them under clinic supervision nursed eight months.

Three of them under clinic supervision nursed seven months.

Four of them under clinic supervision nursed six months.

Five of them under clinic supervision nursed five months.

Three of them under clinic supervision nursed four months.

Two of them under clinic supervision nursed three months.

Four of them under clinic supervision nursed two months.

Of twenty-six women who nursed a previous child two months:

Three under clinic supervision nursed nine months.

Two under clinic supervision nursed eight months.

Eight under clinic supervision nursed seven months.

Four under clinic supervision nursed six months.

Three under clinic supervision nursed five months.

Three under clinic supervision nursed four months.

Three under clinic supervision nursed three months.

Of forty-one women who nursed a previous child three months:

Two under clinic supervision nursed nine months.

Two under clinic supervision nurse eight months.

Nine under clinic supervision nursed seven months.

Seven under clinic supervision nursed six-months.

Four under clinic supervision nursed five months.

Seven under clinic supervision nursed four months.

Nine under clinic supervision nursed three months.

Out of twenty-two women who nursed a previous child four months:

Four under clinic supervision nursed eight months.

Seven under clinic supervision nursed seven months.

Two under clinic supervision nursed six months.

Three under clinic supervision nursed five months.

Five under clinic supervision nursed four months.

One under clinic supervision nursed three months.

This work was right at hand for the pediatric department of our obstetrical clinic, for as the babies were born, and indeed before they were born, it secured control of them. Other infant dispensaries not so attached could not obtain such early control.

On the other hand, the pediatric department is giving the obstetrical service an earlier control of its cases. The women who have young babies in the care of the pediatric department come to the clinic at least at monthly intervals for a year in order to have their babies examined. When they come with their babies, they are closely questioned as to the existence of a new pregnancy. If they are pregnant, they are immediately enrolled in the obstetrical department. In this way we obtain control of a constantly increasing number of cases from the beginning of pregnancy. We are then able to put to the test the value of a system of supervision of pregnancy, with a view to preventing premature death of the fetus, etc. There is no doubt that we have already accomplished a good deal in preventing this loss as well as in preventing still-birth. It is a little too early in the history of this work to tabulate the results.

I am fully convinced that there is a great field for work in puericulture, prenatal and postnatal, which the maternity clinics can and should undertake.

616 MADISON AVENUE.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Meeting of February 9, 1911.

DR. WILLIAM SHANNON *in the Chair.*

MULTIPLE ABSCESES IN ONE KIDNEY IN A CHILD.

DR. JOHN DOUGLAS presented a child, seven years of age, who was admitted to St. Luke's Hospital on November 15, 1910. The family history was negative. During the past three months the girl complained of headache, lassitude, slight fever, and loss of appetite. She lost weight. During the past month she complained of pain in the right side, especially when climbing stairs or making unusual muscular exertion. She complained of pains at times on urination, but had passed no gravel, stones, or blood. The urine was occasionally cloudy.

Two days before admission to the hospital she began to vomit and had severe abdominal pain. The following morning she had a chill which lasted fifteen minutes. This was followed by a high fever. The bowels were moved by glycerin suppositories; no blood was found in the stools.

On admission the temperature was 103.4° F. and pulse 144, with respirations 40. There was a high total and polymorphonuclear leucocyte count. On the right side of the abdomen was found a tender mass; it was situated slightly above the umbilicus. Over the mass was a dull tympany. It was thought that she had a high retrocecal appendicular abscess, although a suppurative kidney lesion was considered.

Dr. Douglas made a high intermuscular incision over the mass; a markedly thickened appendix presented itself and this was rapidly removed. The mass proved to be the right kidney, two or three times the normal size, and it was studded with necrotic abscesses which varied in size from a pin-head to a centimeter in diameter. There were more than forty of these abscesses. The pelvis of the kidney was distended and held about 100 c.c. of cloudy urine. Nephrectomy was performed. The temperature fell rapidly after the operation, the urine became normal, there was no subsequent infection of the wound, and the child was discharged cured at the end of three weeks.

This case was of interest on account of the patient's age and the possible hematogenous infection of the kidney occurring in a child who had not had previously some acute infection, as an

etiological factor. The previous history of the case was also of interest, as it would seem to indicate that there might have been a displacement of the kidney with perhaps intermittent hydronephrosis, the displaced kidney being in a position where it was subject to traumatism, an etiological factor in acute hematogenous infection of the kidney. On the other hand, while the macroscopical appearance of the specimen, showing numerous hemorrhagic areas studded with miliary abscesses, seemed to indicate a hematogenous infection, the dilated pelvis together with the previous history of a cystitis, fever, malaise, and lumbar pain would point to the probability of the lesion being the result of one of those cases of pyelitis due to colon bacillus infection which quickly subsided under treatment with urotropin. After the nephrectomy the urine rapidly became normal. The pathological examination of the specimen had not cleared up the point concerning the route of infection, whether ascending or hematogenous.

DISTURBED FUNCTION OF THE THYROID GLAND: HYPERTHYROIDISM
AND HYPOTHYROIDISM IN A GIRL TEN YEARS OF AGE.

DR. SIDNEY V. HAAS presented this patient, a Russian, whom he saw at the Vanderbilt Clinic, October 6, 1909. She had always been backward in her studies and had nocturnal enuresis. Her tonsils and adenoids were removed three months ago. For the past two or three years she had been under the care of many physicians for an indefinite condition the symptoms of which were as follows. She had pain in the abdomen; she vomited slightly after each meal; she had no appetite; she was constipated; she complained of headache, tenderness of the scalp, redness of the conjunctiva, pain in the eyes, and sore throat.

The physical examination showed a pale, irritable, crying girl who feared and resisted examination. There were present slight exophthalmos, congestion of the conjunctiva. The right lobe and isthmus of the thyroid were visibly enlarged. The circumference of the neck was 27 cm. The scalp was exceedingly tender. She weighed about seventy-three pounds. The apex beat was in the fifth interspace, three-quarters of an inch external to the nipple line; the right border was $1/2$ inch to the right of the sternum. There were no murmurs. The abdominal wall was relaxed and there was no pubic or axillary hair. A diagnosis was made of hyperthyroidism. Catharsis was ordered followed by iron.

On May 23, 1910, seven months later, she again appeared at the clinic and reported that she had felt well until one week ago when she had headache, vomiting, constipation, and pain in the abdomen. She was less excitable and the exophthalmos was less marked. She had gained over sixteen pounds in seven months. She was not seen again until October 19, 1910. She gave precisely the same history as before. She was a sluggish, flabby, anemic looking girl with the adipose layer very

irregular, especially over the abdomen, lumbar region, and buttocks. The diagnosis was now made of hypothyroidism. The patient then was placed for observation in the Lebanon Hospital.

The examination of the urine and feces proved negative. The erythrocyte count was 4,900,000; leucocyte count was 11,000 with polymorphonuclears 62 per cent., lymphocytes 38 per cent. The von Pirquet test was markedly positive. The x-ray examination of the chest showed an enlargement of the heart, but no enlargement of the thymus. At the present time the patient's condition was better than at any time since coming under observation. She had become brighter mentally and her movements were less sluggish. Her color had improved and her expression was entirely different. The irregular fat deposit had disappeared. On February 6, 1911, her weight was 106 pounds, a gain of 34 1/2 pounds or about 50 per cent., in a little more than fifteen months.

Dr. Haas presented this case as one of disturbed function of the thyroid gland because they had in this case a picture of

1. Hyperthyroidism, or exophthalmic goiter, with the classical symptoms of a, exophthalmus; b, enlargement of the thyroid gland; c, hyperexcitability; d, a moderately rapid pulse, e, loss of weight.

2. Hypothyroidism, or myxedema, with the symptoms of a, mental and physical dullness; b, rapid increase of adipose tissue in irregular masses; c, pallor.

3. Stage of balance, a disappearance of the myxedematous characteristics even though the weight was increasing.

That other glands besides the thyroid were involved was probably true; there could be but little doubt that the recurrence of gastrointestinal disturbance was a part of the pathological condition.

This case illustrated the fact that many minor disturbances of the thyroid gland were probably unrecognized; at one end they had the typical picture of exophthalmic goiter, and at the other the typical picture of myxedema; between their extremes there must exist all degrees of disturbance until the normal was reached, midway between the two.

STREPTOCOCCUS INFECTION IN A CHILD TWO YEARS OLD.

DR. MAURICE OLIVER MAGID asked for an expression of opinion regarding this case. The patient was a boy, two years of age. He was suddenly taken ill with vomiting and severe pains in the abdomen, and this was after he had eaten sausage. He had a temperature of 104° F. and marked rigidity on the right side of the abdomen. He was carefully watched for a day and then was sent to the hospital with a diagnosis of possible appendicitis. The following day he was operated on. A normal appendix was found but the peritoneal cavity was found to be filled with pus and streptococci. He did not know just what the cause of the peritonitis was. No postmortem was obtained.

NOTES FROM THE CHILDREN'S SERVICE IN THE PRESBYTERIAN HOSPITAL, WITH EXHIBITS.

DR. WILLIAM P. NORTHRUP said that certain things had occurred in his experience at the Presbyterian Hospital which might be worth while presenting. "When the horse had been stolen and then the door locked" was a matter to be thought about. He told of his experience with cases of vulvovaginitis and of the necessity of closing one of his wards. After an attack of measles he very much feared vulvovaginitis developing in these children. They very often had measles first and this was followed by vulvovaginitis.

Dr. Northrup described the "baby washer," which was similar to a Turkish bath; the babies were washed on a slab, as he demonstrated on the black-board. Liquid castile soap only was used; the wash cloth used was always destroyed.

A tank holding eighty gallons was in use and it worked well; the temperature of the water was 103° F. It was arranged so that the hot water went down and the cold was forced up and so the two temperatures were intermingled to produce the temperature required.

Next he described an asbestos box with an electric heater attached showing what took place in an incubator. It was a very simple contrivance and there was no danger of burning. The bed might be charred, but not the baby.

In Paris they had introduced a so-called "grill," a wire fence around a ward. Dr. Doty, Dr. Biggs, and others felt that they were justified in using it.

DR. HENRY KOPLIK said that in children's hospital service it was very necessary to watch details; that was the necessary thing to do for the best interest of the patients. Every man had his own ideas. Recently he had received a letter from a party in a large city in regard to the crib; it should be thoroughly understood that this crib should be made in such a way that the child should be comfortable.

With regard to the cases of vulvo-vaginitis, they should not, in his opinion, be excluded from the ward; rarely was this disease spread, in spite of what had been said to the contrary.

A COLLECTED STUDY OF SIXTY CASES OF AND CONDITIONS SIMULATING MENINGITIS WITH SPECIAL REFERENCE TO DIAGNOSES.

DR. ABRAHAM SOPHIAN read this paper. He stated that for the past six months, since the Research Laboratory of the Health Department under the direction of Dr. Park had undertaken the treatment and study of meningitis cases in this city, including the preparation and distribution of meningitis serum, he had studied clinically and bacteriologically sixty cases of meningitis and conditions simulating meningitis.

The clinical diagnosis of the bacteriological cause of the various

forms of meningitis had often differed from that established by the laboratory findings. The difficulty and resulting errors in private practice in establishing a true etiological diagnosis as to the type of meningitis, and in differentiating between meningitis and meningism, had been forcibly impressed upon the author and he gave tables showing comparative clinical diagnoses and true bacteriological diagnoses and indicated a number of the more important clinical data, which he had found of considerable value in establishing a clinical diagnosis before lumbar puncture was done.

From a study of the first table it was evident that of the true inflammations of the meninges, tuberculous meningitis is the most frequently met with and most often confused with other forms, especially with epidemic cerebrospinal meningitis. Of conditions simulating meningitis he found bronchopneumonia in children, especially those forms with apical lesions most often mistaken for meningitis. Other conditions were gastroenteritis, acute infections, such as typhoid, and other conditions of the central nervous system such as cerebrospinal lues and anterior poliomyelitis.

Dr. Sophian was of the opinion that in the majority of cases tuberculous meningitis could be diagnosed clinically. The patients were usually under two years of age, but the disease occurs not infrequently later in life. A family history of tuberculosis can frequently be obtained. The onset is an insidious one of two weeks or longer, of apathy, crying, restlessness, occasional vomiting and fever; in younger children there may be convulsions. The condition of apathy, stupor, and impaired mentality was very striking in all cases. During the greater part of their illness the children lie stupid, expressionless, and respond slowly and indifferently to external stimulation. The same condition exists in adults. Other signs of importance are evidence of marked internal hydrocephalus, with the resulting Macewen in older children, or marked fontanel bulging in younger ones. Local palsies, principally facial paralysis, paralysis of the eye muscles, or paralysis of one arm and leg are more common in tuberculous meningitis than in other forms of meningitis. The transitory nature of the palsy is especially striking. Likewise vasomotor changes and marked tache are quite common. There is considerable irregularity of the pulse. Rigidity of the neck and Kernig are only moderate, as a rule. The reflexes are irregular, and at the onset of the disease usually exaggerated. Later in the course of the disease they are diminished or absent. In the early stages of the disease the temperature is only moderate, but later it ranges high, up to 104, or 105 and may show the marked intermittency of the cerebrospinal form. Demonstration of the tubercles in the cord was, of course, conclusive. Tuberculous meningitis usually ran a short course, terminating in death in from two to four weeks after definite symptoms appeared.

Epidemic cerebrospinal meningitis also had a definite and

distinct symptom-complex. The children averaged older; the onset was more acute, with rigors, high temperature, prostration, and severe projectile vomiting. The cerebral condition was often directly the opposite of tuberculous meningitis. The patient was hypersensitive, irritable, constantly crying. Mentality, while usually flighty and disturbed by periods of delirium, was often, except in the last stages, entirely unimpaired for hours. Retraction of the head, tenderness in the back of the neck, and Kernig are marked. Reflexes are irregular and palsies are often entirely absent. Bulging fontanel or Macewen is usually marked, but often to a lesser degree than in the tuberculous form. The pulse and respiration changes are not as marked, except in cases with marked hydrocephalus. Petechiæ and herpes are frequently seen. The cerebral temperatures up to 106 or over are not usually seen with this form of meningitis. While these two forms of meningitis are frequently easily differentiated, they may sometimes so closely resemble each other clinically, especially in the late stages of tuberculous meningitis, that it may be impossible to make a clinical differential diagnosis. The other acute forms of meningitis, as streptococcus pyogenes, streptococcus mucosus capsulatus, pneumococcus, influenza, present almost the same symptom-complex as epidemic meningitis. The history of previous disease, as otitis media, may be of some help, but the diagnosis can only be definitely established by lumbar puncture and examination of the cerebrospinal fluid. It was important to note that in pneumococcus meningitis the cerebrospinal fluid might be sterile, due to a localized cortical meningitis. Meningitis complicating other acute infections, while sometimes difficult to differentiate from epidemic meningitis, could as a rule be diagnosed. One had first to establish the presence of the primary infection. The mental symptoms of restlessness and irritability are not accompanied by the anxiety, constant crying, and complaining of the usual epidemic meningitis; unless delirium was present the patient was usually bright and intelligent. Rigidity of the neck was only moderate, could often be relaxed, and while opisthotonos was present the patient would still be able to turn his head. Kernig's and Macewen sign was present to a lesser degree or might be absent. With the subsidence of the temperature and the disappearance of the original infection, the meningeal symptoms disappear. Poliomyelitis might present for several days certain meningeal symptoms, but the patient was bright and comfortable and did not impress one as suffering from cerebral disease.

Polioencephalitis often resembled tuberculous meningitis clinically, but the local palsies were extensive and permanent. Convulsions are frequent. The diagnosis might be suspected during the acute stage, but could only be absolutely established by lumbar puncture.

Blood count was of aid in diagnosis. The principal features were the high leucocytoses of 20,000 or more in the cerebrospinal

form with the high relative polynucleosis, up to 99 per cent. In tuberculous meningitis there was moderate leucocytosis, up to 18,000, with a moderate relative polynucleosis up to 80 per cent. Poliomyelitis and polioencephalitis in the febrile stage showed a slight leucocytosis.

The Von Pirquet test was not done in this series. However, it seemed to be of value, at least in the negative result.

Once a clinical diagnosis was made, whatever the form, lumbar puncture should be performed.

Dr. Sophian presented another table showing the character of cerebrospinal fluids in the different types of infection. As a rule, the study of the cerebrospinal fluid would, in the case of acute suppurating meningitis, enable one at the first examination to find the infecting organism. The very unusual exceptions were, very rarely in the very onset of epidemic cerebrospinal meningitis, before the organism was free in the cerebrospinal fluid, or in a localized meningitis, as the localized pneumococcus meningitis. It is important where a positive culture is desired to subinoculate the sediment on suitable culture media, as soon as possible after withdrawal from the canal. The usual media used for this subinoculation is 2 per cent. glucose serum agar, blood agar, and 2 per cent. glucose serum bouillon.

In tuberculous meningitis the bacilli can usually be found in the cerebrospinal fluid at some time during the course of the disease; the first examination is usually sufficient to demonstrate them. Long and patient search is necessary; the bacilli are usually very few and scattered and sometimes several hours may be spent in search before they are found. Where the organism is not found during life an examination of the cerebrospinal fluid obtained postmortem will often demonstrate the bacilli in clumps in large numbers. Animal inoculation in positive cases where the bacilli has not been found produces tuberculosis in from four to six weeks.

Cytological examination is extremely important. The increase in the number of cells is constant in the suppurative forms, the preponderance of polynuclear leucocytes is striking; in the late stages of cerebrospinal meningitis, however, as chronic basic meningitis, a relative leucocytosis is present. In the tuberculous form the excess of lymphocytes up to 100 per cent. is marked.

An attempt to classify any particular type of meningitis merely on the number of cells without the demonstration of the infecting organism would apparently be an uncertain thing to do. The gross fibrin content of the fluid after standing is a fairly constant guide, there being an increase in meningitis and very little fibrin in normal fluid. The reduction test of Fehling has been found of no value by the writer. Noguchi's globulin test, in a small number of fluids examined, was substantiated; in inflammatory conditions a positive reaction was present, indicating an increase of the globulin content in the cerebrospinal fluid.

The author referred to several other gross methods and spoke briefly of the treatment which had been carried on along the lines laid down by Flexner, consisting in the spinal administration of the meningitis serum, being guided by the symptoms of the patient and the condition of the cerebrospinal fluid. He urged the importance of a careful study of the condition of the patient as an indication for the use of serum and for varying the dose and for the purpose of recognizing early any complications such as basic meningitis with closure of the foramina.

Dr. Sophian also read a communication from Dr. Park, stating that the Rockefeller Institute for Medical Research had turned over the two horses which produce antimeningitis serum to the Department of Health and that this serum will be supplied to physicians and when possible will be administered on their request. It was desirable that fluid from the spinal canal be obtained in all cases for bacteriological examination. The department would gladly examine these specimens and would not refuse serum to those who found it impossible to obtain specimens of the fluid. At present there would be no charge in Greater New York.

DISCUSSION.

DR. WILLIAM H. PARK said there was one aspect of the paper he wished to dwell upon. All were trying to find the exciting factor in these cases of meningitis, the bacillus causing it in these young children. Very favorable findings came from the laboratory; Dr. Hemenway had found, in forty consecutive cases, that the majority of them were due to the meningococcus and not to the tubercle bacillus. This certainly was of interest. He hoped that the mass of information which was so much desired would soon be collected; the Health Department Research Laboratory was working to bring about the best results.

DR. HENRY KOPLIK brought out in his discussion some clinical points of value, especially in making a diagnosis of meningitis from certain other conditions. During an epidemic of poliomyelitis it was a simple matter for an experienced man to recognize the disease; but when there was no epidemic he did not know of any disease more difficult to diagnose; this was, of course, a very serious matter. Again, in the cases referred to it was a mistake to make such hopeless prognoses; in many of these cases, in four or five weeks, the patients were perfectly well.

In making a diagnosis a very important and valuable aid was to inquire carefully into the mode of onset. There seemed to be some difficulty in getting a history of an acute onset in tuberculous meningitis; if one could get an absolutely reliable history of an acute onset, tuberculous meningitis could be excluded. The history of an acute onset or a gradual one could not be sufficiently emphasized; then the clinical signs should be inquired after and the case carefully studied before a positive diagnosis was made.

The point regarding cytology as giving diagnostic evidence in cases of meningitis he did not think was well taken. If one found the microorganism of the disease, all right. The work of Dr. Sophian and of Dr. Hemenway was taken in a very painstaking way and he hoped that they would soon be able to give a method by which the finding of the tubercle bacilli could be made more easy.

DR. WILLIAM P. NORTHRUP said that the American Pediatric Society had offered a prize for the person who would give it four of the best early diagnostic symptoms of the disease under discussion; nothing came of it. Tuberculosis of the choroid had been described; Dr. Northrup had been looking for such a condition for twelve years and had not been able to demonstrate it postmortem.

DR. HENRY HEIMAN said that a diagnosis should be made by exclusion. The parents should be informed of the value of lumbar puncture and that an examination of the fluid might reveal, and often would reveal, the condition. With regard to the cytology, if they found a very high per cent. of polynuclears there then was a possibility that they were dealing with tuberculous meningitis.

In the pyogenic form of meningitis the time should be taken into consideration; if the patient was ill but one week or ten days, a diagnosis of pyogenic meningitis should be made. If they were ill beyond this time, then a diagnosis of cerebrospinal meningitis should be diagnosed.

DR. CHARLES E. NAMMACK recalled Dr. Hemenway's report at a recent meeting in which the tubercle bacillus was recognized 135 times in a series of 138 cases of meningitis; this certainly showed very good laboratory work.

DR. SIDNEY V. HAAS referred to cases of acute intestinal intoxication which gave rise to the classical symptoms of acute meningitis, a condition that was more common than generally supposed. At the Lebanon Hospital four cases had recently been sent in with the diagnosis of cerebrospinal meningitis and which were found to be cases of intestinal intoxication. Therefore, one should be more careful and examine for the presence of acetone and diacetic acid in the urine. Many years ago he had demonstrated to him a case of tuberculosis of the choroid.

DR. ABRAHAM SOPHIAN, closing the discussion, said that in many cases lumbar puncture was a necessity, especially in the atypical cases.

THE SUBSEQUENT HEALTH OF CHILDREN WHO DRANK MILK CONTAINING TUBERCLE BACILLI.

DR. ALFRED FABIAN HESS read this paper.

Three years ago Dr. Hess reported on the examination of the milk of New York City as regards the frequency with which it contained tubercle bacilli. He found that of 107 specimens examined seventeen contained virulent bacilli, that is to say

16 per cent. He found, however, that the children who drank this milk were at that time in no definite way affected. He now reported upon the further health of these children, having observed them very carefully for this period. These children, eighteen in number, it should be noted drank milk in which tubercle bacilli were found, and may have drunk it at different times, but certainly were not exposed to this infection subsequently to this time, as the mothers were warned to boil the milk. Dr. Hess found of these eighteen children one had developed tuberculosis of the cervical glands, from which he cultivated a bacillus which proved to be of the bovine type as tested by its virulence for rabbits and its cultural growth. The other seventeen children were of about average health and did not show any bad effects from their exposure. At the time they drank the milk almost all of them were below two years of age.

Another point which Dr. Hess brought out as the result of experiments on guinea-pigs was that the frequency of infection as well as the dose of bacilli is of great importance. He showed that, although these animals could not be affected by taking 2 mg. of tubercle bacilli in milk by mouth when this material was given in one dose, they could be infected with less than this amount, if it were divided into ten, twenty, or thirty doses given upon as many days. He reasoned by analogy that it makes a difference whether children take a small amount of tubercle bacilli in one dose or on successive days.

Another point which Dr. Hess brought out was the necessity of providing a safe butter. It is striking that we are afraid to give children milk containing tubercle bacilli, but that we are not afraid to give children between the ages of one or two years butter containing large numbers of these organisms. There should be a means of providing a safe butter just as there is now a way of obtaining a safe milk. It would seem practical if, through the efforts of the certified-milk commissions, we were enabled to purchase a certified or a Pasteurized butter; at any rate this is a timely subject for consideration by these commissions, who have effected such excellent results as regards our milk supply.

Meeting of March 9, 1911.

WILLIAM SHANNON, M. D., *in the Chair.*

HEREDITARY SYPHILIS AND THE WASSERMANN REACTION, WITH
FIVE CASES IN ONE FAMILY.

DR. MARK S. REUBEN presented these patients.

On October 16, 1909, a child one and a half years old was brought to the Vanderbilt Clinic for treatment. The mother stated that there had been a fissure of the anus for six weeks and that there was no tendency to heal. The child had never been

ill before; there were no signs of snuffles or rash of any kind. The family history, however, was very interesting and helped to clear up the diagnosis. The mother had been married once before, and by that marriage had conceived six times. The first child lived three years and died of scarlet fever and measles; the second child lived two years and died of cholera infantum; the third child, the fourth, the fifth, were all stillborn at full term. The sixth child was prematurely born at eight months and died within one week. Her first husband died in 1899 of cerebrospinal meningitis and pneumonia. She remarried in 1900 and by her second marriage has five children, the infant above described being the youngest of these.

The physical examination of the infant was entirely negative; neither the spleen nor the liver was enlarged; no glands were enlarged and there were no scars. There were some signs of a mild rickets. On the strength of the family history and the chronicity of the anal fissure a diagnosis of syphilis was made. The patient was put upon mercury internally and calomel locally. The v. Pirquet test was negative. The fissure did not look as sluggish as before and this treatment was continued. Ten days later a Wassermann test was made but was negative; however, the same treatment was continued and within three weeks after the first visit the ulcer was completely healed.

On November 19, 1909, the second daughter, aged seven and a half years, was brought to the clinic suffering from a unilateral sore throat; the examination showed a diphtheritic-like deposit on the right tonsil. The cultures taken were negative. The cervical glands on that side were enlarged. Six weeks later she developed a typical roseola.

On December 6, 1909, a nine year old child developed a throat condition similar to that of the above.

On December 13, 1910, a boy was brought to the clinic suffering from mucous patches on both tonsils.

On December 19, 1910, another boy was brought to the clinic suffering from sore throat and mucous patches were found.

On December 20, blood for the Wassermann reaction was taken from every member of the family with the following results:

Second Husband.—W. R. (—) negative (physical examination negative).

Wife.—W. R. (+) positive (physical examination negative).

Girl, eleven years.—W. R. (+) positive (physical examination showed mucous patches in throat).

Girl, nine years.—W. R. (+) positive (physical examination showed mucous patches in throat).

Boy, seven years.—W. R. (+) positive (physical examination showed mucous patches in throat).

Boy, five years.—W. R. (—) negative (physical examination negative).

Boy, three years.—W. R. (+) positive (physical examination showed mucous patches in throat).

HEREDITARY SYPHILIS AND THE WASSERMAN REACTION.

DR. MARK S. REUBEN read this paper.

He reviewed the literature on the subject of syphilis from the fifteenth century to the discovery of the Wassermann reaction. This discovery had thrown some light on the nature of the transmission of syphilis and through it they had collected data that disproved the Colles and Profetas laws.

In discussing the mode of the transmission of syphilis to the fetus the writer showed that it is highly improbable that the ovum is directly infected by the spermatic fluid; it was most likely that it became infected from the mother through the placenta. If the ovum were infected at the time of impregnation it was not probable that it would go to the stage of development seen in syphilitic feti. In the case of syphilitic infants spirochetæ are usually found in abundance in the fetal portion of the placenta and almost always in the cord, but are seldom found in the maternal portion of the placenta. From these facts the following deductions could be made: 1. If an infant is syphilitic its father may or may not have syphilis, as the mother may have acquired it from any other source. 2. If an infant is syphilitic its mother positively has syphilis. 3. The most usual mode of transmission is through the placenta. It was interesting in this connection to note that of 123 mothers whose blood was examined within a short time of the birth of syphilitic infants, 110 or 90 per cent. gave a positive Wassermann reaction.

In regard to Colles law, the writer stated that if they accepted the belief that the most reasonable mode of transmission was through the placenta the fallacy of this law was evident. Statistics given by Knopfmacher and others show that of 125 mothers who had syphilitic children, 82 or 70 per cent. gave a positive Wasserman reaction. These women had at no time shown any symptoms, nor had they received any antisyphilitic treatment. Of twenty-five mothers, who had symptoms or who had received treatment, eighteen gave a positive reaction, *i.e.*, 72 per cent. The small per cent. of positive reactions in the untreated cases may have been due to the fact that the children had acquired the syphilis.

There were certain factors which influenced the percentage of positive Wassermann reactions in the mothers of syphilitic children. These were the number of children, the length of time that elapsed after the birth of the last syphilitic child. Mothers who had given birth to from one to seven children reacted in about the same way; that is, a positive Wassermann reaction was obtained in about 60 per cent. Mothers who had given birth to eight or more syphilitic children, and who themselves had no lesion gave a positive reaction in only about 46 per cent. of the cases. When the mothers were examined within one year after the birth of the last syphilitic child a positive reaction was obtained in 90 per cent of the cases. This percentage of positive reactions steadily decreased when examina-

tions were made two, three, or four years after the birth of the child until those made at the end of five years gave only 44 per cent. positive reactions.

In regard to the Wassermann reaction and the Profetas law, namely, the immunity of the children of syphilitic parent or parents, the results of the Wassermann reaction show very clearly that this law is a fallacy. Of 123 mothers, with syphilitic symptoms, 110 of the infants gave a positive reaction. In another group of fourteen mothers with a positive reaction nine of the infants gave a positive reaction. They might conclude that the great majority of the infants of syphilitic mothers were syphilitic themselves. It might be possible that a syphilitic mother, one having latent syphilis, might give birth to a healthy infant, but such a mother never gave birth to children who were immune to syphilis, and healthy at the same time.

Infants suffering from hereditary syphilis almost invariably gave a positive Wassermann reaction. Of 300 cases examined, 298 gave a positive Wassermann reaction. While a positive reaction absolutely spoke for the presence of syphilis, a negative reaction did not absolutely mean the absence of syphilis. In cases of hereditary syphilis, before any symptoms manifested themselves the reaction might be negative; later, with the advent of symptoms, it might become positive. A few infants born of syphilitic parents give a positive reaction, although there were no symptoms of syphilitic infection.

As to the influence of treatment on the Wasserman reaction, it may be said that the sooner treatment is instituted the sooner will the reaction become negative. When treatment was commenced, as soon as a diagnosis was made, 75 per cent. of the cases gave a negative reaction within a month. When the treatment was delayed for six months, only 33 per cent. of negative reactions were obtained. Potassium iodid, soamin, or atoxyl have little or no effect on the Wassermann reaction. Salvarsan would cause a positive reaction to become negative in from three weeks to two months. In children under treatment it is harder to get a negative reaction than in adults.

Dr. Reuben discussed the curability of lues and the Wassermann reaction and concluded that syphilis is not a curable disease. At least they must admit that neither mercury nor salvarsan will cure it. These drugs relieve symptoms, but they do not cure; they hold the disease in check. After the most thorough mercurial treatment many cases have recurrences, and recurrences have already been noted after several injections of salvarsan. A further proof of the incurability of the disease is the fact that the majority of persons contract it but once. The reason the so-called cured cases do not contract it again is because they still have it in a latent form. The expression "Once a syphilitic, always a syphilitic" holds true in the majority of cases.

Although the Wassermann reaction was not specific it was characteristic of syphilis. The consensus of opinion is that a

positive Wassermann reaction means the presence of spirochetæ in the body. In the examination of 1010 sera of normal persons not once was the Wassermann test positive. This would seem to prove that the positive reaction meant the presence of syphilis. The importance of testing the blood of a wet nurse is therefore apparent; whereas a positive reaction means the presence of syphilis, a negative reaction does not mean that the nurse is not syphilitic. It is necessary also to test the blood of the infant. If the infant gives a positive reaction, the mother is syphilitic, whether she gives a positive Wassermann or not. This step should always be taken when the mother (wet nurse) gives a negative reaction.

A study of statistics presented showed that on the average a syphilitic woman conceived about six times, and also that on the average a syphilitic mother had two and three-fourths living children. In spite of the fact that the syphilitic mother conceives oftener than the average woman she has fewer living offspring. A further analysis of the statistics showed that a woman was more apt to abort in her earlier pregnancies. In women who have frequent miscarriage, the reaction was positive in twenty-eight cases out of thirty-two examined. The most usual time for these women to abort was after the fourth month, at a time when the placenta was fully developed. This lent support to the probable infection of the fetus through the placenta.

In regard to the virulence of infection, the Wasserman test gave only 78 per cent. of positive reactions in the primary stage of the disease; in the secondary stage 92 per cent. of the tests gave positive reactions and in the third stage 82 per cent. gave positive reactions. Syphilis was responsible for a large percentage of infant mortality. In one group of 216 infants of syphilitic mothers 190 died. In twenty-three families, where the mother was syphilitic and there were 153 children born, all died. In another group of 491, 382 died. About 70 per cent. of all infants from syphilitic mothers die within one year. When they saw that only 20 per cent. of all conceptions of syphilitic mothers resulted in birth of syphilitic children and that 70 per cent. of these die within one year; and that hence only six per cent. live beyond one year, excluding 20 per cent. born healthy during the declining stage of the disease, they may assume that only 25 per cent. of all conceptions of syphilitic mothers will result in living children.

DR. L. E. LA FETRA said he had asked Dr. Reuben to present these patients because the family history illustrated more points in relation to hereditary syphilis than any other he had met. The first husband presumably had the disease; the second husband gave a negative Wassermann reaction and presented no symptoms of syphilis. This was an exceedingly important set of cases and should be helpful to all. There were two points in particular that Dr. La Fetra wished to emphasize. The first was the value of the Wasserman reaction in making a

diagnosis of hereditary syphilis, even though there were no symptoms presented that were definitely syphilitic. The baby shown had had an ulcer at the anal margin which was seen by several dermatologists at the Vanderbilt Clinic, and they all thought the lesion to be tuberculous. However, they still adhered to the diagnosis of syphilis. Of course Von Pirquet test was negative, and on the basis of the family history we adhered to the diagnosis of syphilis; there was also an enlarged spleen, and large epitrochlear glands. The Wassermann reaction cleared up the diagnosis; this was not a case of tuberculosis but one of syphilis.

The second point Dr. La Fetra wished to emphasize related to the Wassermann reaction in selecting wet nurses. While it would rarely be needed, it might in doubtful cases be of decided help. Infants born of syphilitic mothers give a positive Wassermann reaction in 99 per cent. of the cases; in only 1 per cent. did the reaction fail, certainly a very small percentage. If the reaction is present in either the baby or the mother, it would be wiser, notwithstanding the slight danger to the foster child, to look for another wet nurse. In his opinion Dr. La Fetra thought it much safer to make use of wet nurses whose babies were over 6 weeks old; then the clinical examination would usually be all that is needed.

DR. HENRY KOPLIK said there was going on at present a great discussion in the foreign journals regarding the value of the Wassermann reaction. There certainly was a great responsibility placed upon the doctor in selecting wet nurses, especially for babies before the age of three months. The question was raised whether or not the Wassermann test should be taken as a standard in the selection of wet nurses, a very important matter. If this reaction could be taken and something like uniform results obtained, it would be without doubt a good thing. One observer, however, could state that it was positive in one case; another, that it was only slightly so; and yet another, that he was not sure. The discussion was still going on as to whether the Wassermann reaction should be taken or whether the clinical symptoms presented should be alone taken in the selection of wet nurses. The question had not yet been developed to the extent that they were able to state with positiveness that it was of great value in the selection of wet nurses. Dr. Rudolph Fischl, an old friend of Dr. Koplik, after an experience of twenty-five years in the selection of wet nurses, stated that he had not seen one case where he had "passed" a wet nurse on clinical grounds where syphilis had developed in the foster child. Any clinician with his eyes open need not subject the children or mothers to this test. When a wet nurse was wanted, she was wanted badly. The time was premature in deciding upon the value of this test; its value might be decided soon, but they were not yet ready for it.

A DUODENAL TUBE FOR INFANTS.

DR. ALFRED F. HESS read this paper and presented a tube with which he was able to gain access to the duodenum in infants ranging from two to fourteen months and weighing as little as seven pounds. This tube consisted of a simple rubber tube to which a perforated leaden ball was attached. It acted by means of gravity, entering the duodenum quickly within from twenty to thirty minutes. Dr. Hess exhibited *x-ray* photographs which clearly showed the tube in the duodenum; in one of these the stomach was filled with bismuth and the metal end of the tube was below in the intestine. He also showed alkaline bile-stained duodenal juice, which was the characteristic juice of the duodenum and which might be taken as a criterion that they had passed through the stomach into the intestine. This was the first time that it had been actually shown that they could reach the duodenum in infants. Dr. Hess said that he did not as yet know the value of this new method, but it would have scientific value in investigating cases of malnutrition of infants. In practice at present its general value seemed to lie in the diagnosis of pyloric stenosis, in which if they entered the duodenum and obtained the characteristic juice, they could rule out the presence of a marked stenosis. It could also be used in the feeding of infants who suffered from protracted vomiting where the tube could be left *in situ* and the baby fed for some days in this manner.

DISCUSSION.

DR. MAX EINHORN said that one year ago in Chicago he had occasion to speak on the subject of dilatation of the stomach in grown people; he also reported a case of stenosis of the pylorus in an infant three months of age helped by stretching the pylorus. Since that time he had had occasion to introduce the instrument he presented through the pylorus and into the duodenum. After he had employed this method in the adult he conceived the idea that it was well worth trying in infants and he asked Dr. Louis Fischer to allow him to make certain examinations of infants at the Sydenham Hospital. Dr. Einhorn presented his duodenal bucket and told of its value in ascertaining the permeability of the pylorus. He had also devised a duodenal olive for use in little children, which was for the purpose of determining whether or not the pylorus was permeable. The distance to the cardia was ascertained by means of certain measurements. After the introduction of the olive, it was left in a few hours and then withdrawn; the distance from the lips to the bile stain was noted. If there was any regurgitation of bile, this showed. In a case of a three months old infant, the instrument reached the duodenum in forty minutes when duodenal clear fluid of a golden color was obtained. To make the test positive the little one should be given milk; while sucking you could withdraw pure bile without the admixture of milk.

With regard to stretching the pylorus, Dr. Einhorn said he had constructed a similar apparatus for children that he used for older people and this he demonstrated. It was in fact a pyloric dilator.

DR. LOUIS FISCHER was very much interested in the work of Dr. Hess which had been duplicated during the past year by Dr. Einhorn. The instrument presented was merely a long tube which ended in a little bulb; this was passed into the stomach as one would pass an ordinary stomach-tube and then one waited but a little longer than did Dr. Hess. An ordinary glass syringe was then attached and the duodenal contents aspirated. If milky fluid was obtained it was presumed that the duodenum had not been entered. However, if one waited from twenty-five to thirty minutes a golden-yellow or greenish fluid would be obtained; usually from 10 to 12 c.c. were withdrawn.

Dr. Fischer reported the case of an infant three days old, with constant vomiting. Very active antiperistaltic waves were visible. These antiperistaltic waves were most pronounced when food reached the stomach. This condition persisted for over two weeks.

Neither caseine nor fat flocculi were found in the feces, the movements consisting of meconium plus jelly-like mucus.

The Einhorn infantile duodenal bucket was introduced, and left in the stomach over night. In the morning it was withdrawn by means of the silk cord to which it was attached, and it was seen by the stained cord that the bucket and the cord to which it was attached had passed though the pylorus into the duodenum at least 7 cm.

This yellowish or greenish stain is characteristic evidence that the pylorus was not stenosed, and it eliminated the grave doubt of a pyloric stenosis. Subsequent events proved the correctness of the diagnosis. The infant made a complete recovery. The treatment consists of daily lavage and rectal feeding.

DR. THOMAS S. SOUTHWORTH did not believe it was necessary to introduce the bucket to tell whether or not there was true stenosis of the pylorus; clinical evidences could be obtained; if there was true stenosis, there would be no milk residue in the movements.

DR. HENRY KOPLIK said that the work described by Dr. Hess was of great interest, and Dr. Hess had added another weapon to the scientific work in this direction. There was one point, however, that Dr. Koplik wondered at—the confidence expressed at the ability to get good results in cases of either apparent or real stenosis of the pylorus. Some years ago Dr. Koplik invented an illuminator which he had since abandoned; it was for the purpose of illuminating the stomach and pylorus. If one had a case of so-called relative stenosis or even a real stenosis of the pylorus with its accompanying hypertrophy and spasm, one could feel the pylorus and study the case. He could not see how one could speak of treating these cases by dilatation with any such

confidence as expressed. If the pylorus was sufficiently dilated to allow the beads to pass, he did not believe it was a case for dilatation. It should be remembered that there was a varied pathology and pathogenesis in these cases; therefore, any case in which the bead can enter the pylorus did not call for dilatation of the pylorus. One too should watch the stools and see if there was any milk residue present. Any pylorus that allowed a little amount to pass through had no spasm but was relaxed. What Dr. Southworth had stated was a point well taken—examine the feces; one did not need to go further than that. What had been said regarding the value of the instruments presented he thought was rather utopian; he doubted whether any man could say that he had passed such a sound from the mouth to the pylorus and through it in fifteen minutes; he doubted whether it had ever been done.

PREMIUMS FOR NURSING MOTHERS AND MILK DEPOTS FOR INFANTS.

DR. CHARLES HERMANN read this paper in which he stated that in France and Germany premiums had been given to nursing mothers for some years. In Berlin each nursing mother who presented herself regularly with her baby at the milk depot received a sum weekly or fortnightly in advance, not exceeding \$1.40 per week. The majority received between thirty-five and eighty-five cents. The object of these premiums was to encourage breast-feeding and to keep the infant under observation so that the mother might be instructed. In 1908 12,519 mothers were helped in this way. Some of those who had had experience with this method thought that the percentage of nursing mothers was thereby increased, while others did not believe there was much if any increase in the number. Dr. Hermann did not believe the results justified the great expenditure. It was admitted that the mothers stayed away from the depots as soon as the premiums were stopped; they had not been educated to an appreciation of the value of regular medical supervision. If the mother were really educated she would learn from her experience with the first baby how to care for succeeding ones, but this was not the case; the mothers came again with the second and third child for the purpose of getting the money which was used for alcoholic drinks or other purposes rather than for the purpose of supplying better food for the mother. Even with this indictment the time that it was possible to keep the mothers under observation was comparatively short, from seven to fourteen weeks. Dr. Hermann thought the money could be employed to better advantage by paying visiting nurses \$75 per month. In a well populated district the nurse could make about fifteen calls a day so that the cost of each call was approximately twenty cents. As the mothers received under the premium method from forty cents to \$1.40 from two to seven calls could have been made for the same money. Milk depots which simply distributed milk were of little value. It was necessary to emphasize

the fact that they might be harmful by diminishing the number of breast-fed infants. If instruction and medical supervision were added to the work of the milk depot, there was usually no corps of visiting nurses, or if there was the number was inadequate. In Berlin the first milk depots were established in 1905. There were now seven, all under the direction of well-known pediatricists so that there could be no doubt but that they were well conducted. Tugendreich summed up the results as follows: "When we consider the small number of institutions; the small attendance at many places; the short period of observation which in many cases did not admit of any beneficial results, it was not difficult to understand that a marked success of the depots was not perceptible and that there was no distinct reduction of the infant mortality. It was not the fundamental idea that was at fault, but the incomplete and imperfect carrying out of the plan." There were many reasons why mothers did not come to the depots. Some were unable to leave home, and then there was the carfare and waiting. Again many times the weather was so inclement that the mothers would not risk taking the babies out. Again many mothers failed to come in the beginning when the baby needed the attention most. For all of these reasons a corps of visiting nurses was essential. The nurse visited the home shortly after the birth of the child and instructed the mother and endeavored to keep the child at the breast. In the quiet of the home the mother could be given individual instruction to better advantage. In this way the number of visits to the depot could be regulated so as to avoid the waiting on the part of the mothers and congestion at the depots.

Dr. Hermann described a method they had adopted at the Lebanon Maternity Hospital for following up the mothers after infants were born in the maternity wards. While in the hospital the mothers were instructed in the care and feeding of infants. In order to assist the memory a printed form was given to each mother containing a few of the most important points. They were also given a card to the pediatric department of the dispensary with instructions that they should return to the dispensary in ten days after leaving the hospital, or in special cases sooner. If they did not come a postal card was sent on a printed form and if they failed to respond to this a visit was made to the home. Sick babies were to be brought to the dispensary immediately. From his experience he was led to emphasize the following points: 1. The importance of giving the mother instruction from the start. 2. Of fourteen deaths seven occurred during the first month of life, and of these five occurred during the first two weeks. Therefore anyone who expects to see a drop in the infant mortality as soon as a milk depot is established in a neighborhood is bound to be disappointed. 3. The milk depot should be associated with an out-patient department for treating babies that are slightly ill, and a hospital ward for those that are very sick. Breast milk

should be provided for special cases. 4. From 75 to 80 per cent. of these mothers are able to give the breast for five or more months. Of the remainder very few are too poor to buy a quart of bottled milk. They can easily be taught the modification of such milk. It is not necessary to distribute modified milk. 5. For the majority of cases one visit monthly to the depot is sufficient. For special cases more visits are necessary. The city need not try the very expensive experiment of providing special milk for infants. The cost of distributing modified milk at depots is enormous. The best charity is that which teaches the poor to help themselves. If the mother learns to prepare the milk herself she is to a certain extent independent and can utilize the knowledge at some future time. The emphasis should be placed on the importance of breast-feeding, not on the distribution of cow's milk of good quality.

DISCUSSION.

DR. CRAGIN said that one of the most important points to be emphasized was the value of breast-feeding and the advantage of mothers coming to the milk depots still nursing their babies. The responsibility was thrown back upon the obstetrician who should see that the baby was kept at the breast if possible until it got to the depot.

As the obstetrician looked at the problem, it was resolved into two factors: First, Did the mother desire to nurse her baby? Second, Were the mother's breasts fit to nurse her infant? So far as the first factor was concerned, much could be done by the obstetrician. It did not seem, however, that the giving of these premiums was going to accomplish a great deal. A great many women were opposed to nursing their babies because of the social demands made upon them; at the same time, if they were told that nursing their babies was better for the uterus and pelvic organs, especially for one month after the delivery of their children, he believed many would consent to nurse their infants for this period of time, it being for their personal good.

Again, many of these women could then be persuaded to continue nursing their infant because it was doing so well on the breast.

So far as the breast was concerned, the question arose, was it suitable for nursing? "One never can tell by the looks of a toad how far it can jump." One can never tell either how much a breast will give; a little breast may give a large quantity of milk. It should be remembered that much can be done to make a breast secrete milk in abundance and this Dr. Cragin illustrated by citing a case that occurred at the Sloane Hospital. The child was a full term ectopic; for nine days after its delivery no attention was paid to the mother's breasts; the woman naturally had gone through a serious operation and they did not think it was fair to her to nurse the child, at least for a few days. On the ninth day some attention was paid to the condition of the breasts

and a very little amount of milk was noted. The breasts were then massaged every four hours and, on the twentieth day a strong baby was placed at the breast. On the twenty-second day her own baby was nursed every four hours; on the thirty-eighth day the infant was nursed every two hours. After the forty-sixth day the breasts were well developed so that the child received no nourishment except from the breasts of the mother. In this instance the breasts were developed by massage, starting at a time when there was but very little milk.

Another factor of great importance in encouraging the secretion of milk, especially in those cases where at first it seemed hopeless even when massage had been given, was to place a strong baby to the breast and to administer at the same time certain malted preparations; this would help very materially in stimulating the secretion of milk in a breast that otherwise would be of no use. There were a number of breasts that could not be used entirely; Dr. Cragin believed that it was best, however, to use breast milk that could be obtained, supplementing if necessary. The obstetrician of to-day believed in using a breast that could be used and in not being discouraged even if at the start the breasts looked hopeless. Try to develop these breasts and make them useful; anyway, use them in part; keep the baby on the breast if possible.

DR. L. E. LAFETRA was opposed to all measures that reduced the responsibility of the father or mother of the family for the care of the children they voluntarily brought into the community. There was too much of a tendency to do things for and give things to the poor. Except in rare cases of extreme destitution food and money should not be given away; instead, careful instruction should be given with the baby as the text. Instruction did not pauperize, but helped to put the recipient in a position less apt to require assistance in the future. The encouragement of breast-feeding was of the greatest value and, in Dr. LaFetra's experience, nursing for six months could be carried on by from two-thirds to three-fourths of the women they saw at the dispensaries. The modification of milk at home for supplemental feeding, or mixed feeding, and for feeding after weaning was perfectly satisfactory. It required time and patience to teach the mothers, but the effort was well spent and the results were most gratifying.

Dr. LaFetra was in sympathy with the conclusions presented by Dr. Hermann in his paper.

DR. JOSEPHINE BAKER stated that there were two points to be considered with reference to the work of the milk stations: 1. They must be supplemental to the work of visiting mothers in their homes, and 2. They should not be allowed to defeat their own purpose, which was that of the reduction of infant mortality by encouraging artificial feeding. She said that the question of breast-feeding of infants among the tenement house population was largely an economic one. Many of the women were forced

to wean their babies because it was necessary for them to go out to work, and many because they themselves were not sufficiently well nourished to furnish proper nourishment to the babies. The milk stations, therefore, in encouraging breast-feeding, should furnish milk to nursing mothers. Dr. Baker said that she personally was opposed to the offer of premiums to nursing mothers, but that she thought that possibly a form of industrial insurance might be devised which would relieve the mother from economic strain during those months when breast-feeding of the infant was most important. Because the milk stations were primarily centers of instruction where milk was distributed, she thought that the name "Infants' Milk Station" was an unfortunate one, and hoped that something better could be devised which would call attention to the educational side of the work as well as that of milk distribution. She approved the home modification of milk, as tending toward educating the mother and making her more independent of the milk station in case she moved from the vicinity. It was the intention of the Department of Health to furnish plain milk and to have the mothers instructed by the nurses in the methods of modifying for infant-feeding.

DR. SIDNEY V. HAAS said that he agreed with the conclusions reached by Dr. Hermann.

Five years ago he looked up the question of milk depots while he was abroad. These had been started in Berlin about six months before, under the name of "Fürsorge-Stelle," with distribution of money premiums to nursing mothers. Although in Paris, where the idea was first tried out at the "Consultations des Nourrissons," the money premiums had at that time already been abandoned because of the unfortunate experience they had had with it. It was found that if one woman because of her small income received 9 francs weekly and another because of a somewhat larger income received only 5 francs, when the latter learned of the larger sum received by her neighbor, she at once repaired to the "consultation" and threatened to discontinue breast-feeding unless her premium was raised. The work progressed more satisfactorily without premiums.

The other organization in Paris at that time was the "Goutte de Lait," an organization comparable to one of our large milk companies, with numerous stores at which milk could be obtained either at the regular price by anyone, or for half price or for nothing—tickets for the latter being obtained at the central office after careful investigation, requiring renewal each month. This concern was able to pay a large dividend in profit.

With regard to the milk stations Dr. Haas thought they were on the wrong track; nothing could be worse than to call them milk stations; the name implied places where milk is to be obtained and which is paramount to stating that by using these stations breast-feeding was not a necessity. Any name but milk station would answer. It seemed to him that they were designed to add to the infant mortality rather than otherwise

and they were going to create chaos instead of order. The organizations already existent should be utilized. There was no doubt but that these depots were of great value, a capital thing, if the babies could be supervised and according to the methods outlined. He thought that money was now being wasted in paying rentals for these stations.

With regard to the procuring of physicians for such stations, they should be men trained by institutional work or other experience. The milk supply to these stations was open to much criticism; the cost of maintaining and distributing it here for instance was excessive. The milk should be approved milk sold by dealers under supervision.

A few years ago it was thought that breast-feeding was a lost art; every woman who could not nurse her infant tried artificial feeding and usually succeeded. Opinions had changed during the late years and because of the experience obtained it had been found that from 70 to 80 per cent. of the babies could be breast-fed. It was important to impress upon the mothers that their infants should be breast-fed. Dr. Haas reported one instance in which the mother was enabled to nurse her baby after it had been weaned for ten weeks; the only stimulation required was the baby's mouth.

In closing Dr. Haas believed that the idea of having milk stations was an ideal one, that the name should be changed, that the stations should be placed in the rooms of organized institutions; also that the milk supply should be at no cost to these institutions.

DR. HENRY KOPLIK said that we were apt to make mistakes in endeavors to carry out the work done in Europe in America. Many infants in Europe did not bear the same relationship to their mothers and fathers that they did in America; a similar class in this country was not met with and for that reason the preservation of infant life here required different measures from those employed on the Continent. Dr. Koplik did not meet with mothers who were unwilling to nurse their infants; in fact those that came to him with no breast milk deplore this fact and often shed tears because of their inability to nurse their babies. In America this reluctance to nurse on part of the mother was a factor in the problem that could be left out, according to his experience.

With regard to the milk depots, he thought they had come to stay; there should be in attendance a physician whose duty it was to instruct the mothers how to give milk to their babies. These stations had done lots of good in the way of life-saving. The only milk depots that do harm were those without control. The milk depots had come to stay and Dr. Koplik was the means of introducing them here.

DR. GODFREY R. PISEK did not believe it was always a question of unwillingness on the part of the poor mother to nurse her child; often they could not nurse their children because of

financial circumstances, the mother being obliged to go out to work. In many cases they were instructed by their attending physicians or by midwives to discontinue nursing their babies, and they then often resort to milk furnished by the depots.

Dr. Pisek agreed in the main with Dr. Hermann's conclusions but he did not agree with everything he said about the value of consultations. There was no doubt as to the real value of these consultations; the mothers were there given an opportunity to compare their infants not only as regards nutrition but also their clothing and general development. They looked forward with interest to the weekly consultations.

There was no doubt as to the value of the "follow up" system and the conferences that were held between the mother and nurse. The mothers did not seek the depots because they felt the need of instruction, but because their babies were failing or were sick. Some years ago the depots with which he was connected dispensed milk in baby bottles, which cost twenty-eight cents a quart to prepare. Now the mothers were instructed how to modify it themselves at home and he learned that it was only the very exceptional mother who could not be taught how to do this properly.

Another important point in this educational method pertained to the knowledge of baby hygiene gleaned by the mother who lived upstairs or downstairs; they no doubt learned a great deal from hearsay when they discussed the nurse's visits.

As to the distribution of pamphlets for the instruction of mothers, it should be remembered that the personal equation counted for more than literature. The only way to reach these women was through the doctors and nurses. Instruction cards accomplished very little indeed.

DR. THOMAS S. SOUTHWORTH said that if, as stated, there were thousands and thousands of children that were being fed on the bottle because there was no breast milk, this was the strongest argument in favor of sending out nurses to the homes to give advice about their feeding before they were entirely deprived of the breast milk. If the importance of breast-feeding were better taught so many of these children would not come to the milk dispensaries.

DR. CRAGIN agreed with what had been said regarding nursing mothers. It was the exception, not the rule, in his experience, to find a mother who was not willing to nurse her infant. The education of the public in this matter had born fruit and the majority of women are not opposed to nursing their babies. It was the bridge whist fiend and those of that character who did not wish to nurse. Many of the women he met with were very anxious to nurse their babies and often spent many unhappy moments with tears in their eyes when told they were unable to do so. The percentage of those in the so-called higher walks of life who were unable to nurse after a very few weeks was ex-

tremely large. This was one of the penalties of modern life. As many as 30 to 40 per cent. of such women were incapable of furnishing milk for their babies.

DR. CHARLES HERMANN, closing the discussion, said that because of the birth certificates they could get information regarding these babies at the time of birth. Forty per cent. of the births in the Greater City of New York were in the charge of midwives and their reports came of necessity to the Department of Health.

With regard to the milk depots, at the Good Samaritan much good had resulted from their use; however, efforts were being made to produce better methods. That was, following up these children. There was no doubt but that the milk depots should be conducted with the affiliation of proper instruction on the part of the visiting nurses.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Treatment of the Pains of Acute Anterior Poliomyelitis.—T. A. Williams (*Jour. Amer. Med. Assn.*, 1911, lvi, 192) says that there are two distinct types of pain resulting from poliomyelitis. The first is that due to meningitis. The second is due to the nutritional and mechanical effects which follow destruction and interference with the neurons which govern the muscles. It is due to stretching and sagging of muscles and joints. The atony of the muscles is further favored by this passive stretching which, too, increases the pain. The methods which most readily relieve the pains are galvanic electricity, suspension and support. Writers usually advise the postponement of electricity for two months from a vague idea that electricity should not be applied in inflammatory states. But there is no inflammation either of muscle or nerve in this disease: these structures are affected by a degeneration secondary to an inflammation which implicates their cells of origin and which itself is interstitial, the cells being involved only on account of their contiguity to the diseased process. The writer records his experience in the application of galvanic electricity in the first week of the disease. So far from irritating, it has afforded great relief, enabling the patient to pass into a tranquil sleep from a condition in which his most imperative desire is frequent change of position. After the paralyzed muscles of the limb have been made to contract by galvanism, positions which before were intolerable can be maintained with ease. In this way the prevention of contractures is much facilitated. Suspension in water also acts by relieving the torsions, stretchings and involuntary tightenings which are the accompaniments of even the best devised supports. The third means of relief of abnormal tensions of muscles and fibrous tissue

is the suspension or support of the trunk and limbs by a jacket, in slings and cradles or by pads and tilting of the bed.

Tuberculous Meningitis and Choreiform Movements.—L. Babonneix and G. Paiseau (*Gaz. des hôp.*, Dec. 29, 1910) state that there are cases of apparently choreiform nature that result from tubercular meningitis involving the motor areas, and may be denominated symptomatic chorea. A case is described in which a child in the course of tubercular meningitis had typical choreic movements. These facts draw attention to the cortico-meningeal reactions productive of choreic movements. In Sydenham's chorea, meningeal lesions have frequently been found. In ordinary chorea they are also found. Choreiform movements may be replaced by fibrillary reactions in some cases.

Value of the Von Pirquet Reaction in Children.—Leo Cohn (*Berl. klin. Woch.*, Oct. 3, 1910) believes that the skin reaction is of most value in the tuberculosis of infants. A positive reaction in adults and older children has no practical value; a negative one is not against tuberculosis with any certainty in cachectic persons. Infection with tuberculosis is most frequent in the earliest months, especially in families that are tuberculous. A tuberculous infection in a nursing child has a bad prognosis. Of eighteen cases infected in the first year, sixteen died; only two failed to have a generalized tuberculosis within eighteen months.

Enlargement of the Tubercle of the Tibia.—Enlargement of the tubercle of the tibia during adolescence has been described as due to the tearing off of the epiphysis of the tubercle, or of a portion of it, by muscular violence, occurring usually in athletic boys. R. C. Elmslie (*Brit. Jour. Child. Dis.*, 1911, viii, 9) says that this theory will not account for all cases. Some cases are bilateral, some are ascribed to one or more direct injuries or to occupations requiring kneeling, and in some no history of any sort of injury can be obtained. The additional spicules of bone formed over the tubercle are actually embedded in the ligamentum patellæ or in the cartilaginous epiphysis. The author believes that the condition may be a chronic inflammatory process, due to slight injuries of varying nature, and leading to inflammatory enlargement of the cartilaginous tubercle and irregularities in its ossification.

Proctoscopy and Sigmoidoscopy in Infancy as Applied to Infectious Diarrhea.—From the local study of the intestinal mucosa of twenty-four cases with a pneumatic proctoscope, H. I. Bowditch (*Arch. Ped.*, 1911, xxviii, 36) concludes that cases of diarrhea which have a history of blood in their stools (especially among infants) show signs of inflammation (red, thickened mucous membrane, prominence of the follicles, ulcers of varying types, but no true membranous condition) throughout the sigmoid and rectum, especially during the acute stage of the disease. These lesions seem to vary according to the virulence of the infection as to number and general appearance. They gradually become healed, leaving no signs nor evidence of scar tissue visible

to local sigmoidal inspection in life. Blood and normal intestinal mucous membrane may be present at least in the sigmoid and rectum in cases of fermental diarrhea.

Diagnosis of Abortive Whooping-cough by Means of the Reaction of Bordet-Gengou.—Albert Delcourt (*Arch. de méd. des enf.*, Dec., 1910) says that the discovery by Bordet and Gengou of a small coccobacillus in the expectoration of children having whooping-cough has revolutionized the diagnosis of this disease. We do not now have to wait for the appearance of the whoop before isolating the child from other children. This microbe is found in pure culture in the exudation of the bronchial tubes, which is rich in leukocytes, and of white color. They are much more frequent at the beginning of the disease than after the phagocytes have acted on them. When the infection has become mixed they are much harder to find. The microorganism is ovoid, sometimes elongated, sometimes short and resembling a micrococcus. It can be stained with Kuhne's blue, and toluidine blue, the outside and the extremities being of a deeper color than the rest of the cell. This microbe has been cultivated by its discoverers in a medium prepared by themselves. The colonies found on the third day are white, circumscribed, and projecting. Its identification becomes more difficult as the disease advances. When complicated with bronchitis, bronchopneumonia or influenza it is impossible to find the specific microorganisms, but its presence may be proven by the fixation of the alexin. Gengou and Bordet have demonstrated in the serum of adults who had pertussis the presence of an antipertussis sensitizer which demonstrates the true nature of the disease. In the adult and in many children the whoop and the cry are absent. Yet these persons have an abortive form of the disease, as may be shown by this test. All children who, during an epidemic, show obstinate cough and vomiting should be submitted to this test. The abortive cases are more frequent than the classical ones, and it is due to their contagion that the mysterious spread of the disease has occurred. In an epidemic localized to one village tests were made which proved these facts. A systematic search with this reaction proved the diagnosis. Children who are carriers of the microorganism remained in the schools and spread the disease; a teacher who had an obstinate cough but no whoop carried it from school to school where she taught singing. The author concludes that pertussis of the abortive type is frequent among both children and adults; prevention will seek out these cases; the symptoms may be very slight; the diagnosis can be made only by the Bordet-Gengou test; the fixation reaction is of value in differential diagnosis.

Myocarditis and Rapid Death in Scarlatina.—E. Weill and G. Mouriquand (*Presse méd.*, Jan. 11, 1911) say that in sudden death from scarlatina, autopsy shows no lesions; but in the cases reported no histological examination has been made. In a case treated by the authors, in the fourth day of the eruption signs of

myocarditis appeared suddenly and death resulted. The autopsy showed degenerated myocardium and a histological examination gave lesions of acute myocarditis. The history of the case is given by the authors. The patient was a young man nineteen years of age. From the beginning the cardiac symptoms were prominent, tachycardia ended in death after a few days. There was a recent pericarditis at the base of the heart; along the coronary arteries were hemorrhages; the myocardium was discolored and softened; the microscope showed intense infiltration with leukocytes. The kidneys were congested and edematous, and the liver showed perivascular inflammation. The suprarenals showed nothing at all abnormal. The authors believe that acute myocarditis is generally the cause of sudden death in scarlatina.

Peritoneal Complications of Scarlatina.—A. Touraine and H. Fenestre (*Ann. de m'éd. et Chir. inf.*, Jan. 1, 1911) reports the case of a child attacked by acute appendicitis and operated upon, who during his convalescence was taken with scarlatina. At the time of the appearance of the exanthem all the symptoms of acute peritonitis appeared. These symptoms disappeared with the fading of the eruption. The vomiting and constipation seen in the invasion of scarlatina may be due to a lymphoid inflammation of the intestinal glands, or to a slight peritonitis. The observations of other authors show that the serous membranes are easily attacked in scarlatina, and that the peritoneal symptoms may even precede the exanthem. We may say that this exanthem is localized on account of previous peritonitis lesions as in the authors' case. Parallel with the exanthem we have a peritonitis of the eruptive stage which disappears with the rash. In these cases the prognosis of the peritonitis is always good.

Treatment of Angina with Membrane and Prophylaxis against Diphtheria.—Paul Gallois (*Rev. de ther. médico. Chir.*, Jan. 1, 1911) says that one species of microorganism may be superposed upon another, giving mixed infection. The disease produced by this mixing of organisms is a variable quantity. There are aberrant types between classical ones. Between the ordinary forms of diphtheria and angina with white membrane are transition forms characterized by presence of nonvirulent Klebs-Loeffler bacilli. These organisms may become virulent and propagate true diphtheria. A white angina caused by the streptococcus infects another person; this second case is infected with pseudodiphtheria bacilli, which are nonvirulent diphtheria bacilli. This person may transmit to another a mixed angina of streptococci and diphtheria, the latter becoming virulent, and causing true diphtheria. Thus a simple angina with membrane may be transmitted as a virulent diphtheria. The author treats all cases of angina with membrane as if they were diphtheria. He uses swabbing with an oily solution of phenic acid, 1-1000 or weaker. Whatever antiseptic he uses he removes the membrane mechanically, taking care not to cause bleeding, but to gently remove

the loose membrane and impregnate the remainder with the antiseptic. Gargling with its accompanying swallowing of fluid left in the mouth is of value to disinfect the pharynx. Rhinopharyngitis is always accompanied with swelling of the neighboring glands. There is always present a rhinopharyngitis which the author treats by spraying with phenic solutions. In general, a cure is obtained in thirty-six to forty-eight hours. If the case is not cured in three days antitoxin is injected.

Differential Diagnosis between Cerebrospinal Meningitis, Epidemic Poliomyelitis, Infantile Paralysis, and Infantile Encephalitis.—(*Arch. de méd. des enf.*, Jan., 1911) says that after the acute period of cerebrospinal meningitis the abolition of reflexes, muscular atrophy, electrical modifications, all are similar to those seen in infantile paralysis. Death may occur rapidly from respiratory or cardiac troubles of bulbar origin. The peripheral nerves or the spinal cord roots may be affected. The polymorphism of the disease is great. Some authors have claimed the identity of cerebrospinal meningitis and infantile paralysis. It has been established by the observations of several authors that in infantile paralysis microorganisms are not found in the spinal fluid. Those that are found are probably due to secondary infections. Leukopenia is found in infantile paralysis in contrast with the hyperleukocytosis of cerebrospinal meningitis. Inflammations of the ocular globe, modifications of visual acuity and of hearing are not seen in infantile paralysis, while sometimes present in cerebrospinal meningitis. In the former, intelligence is preserved; it is lost in the latter. There are intermediate types between the painful forms of infantile paralysis and the meningitic forms of epidemic poliomyelitis. They may be the same disease, one epidemic, the other sporadic. In epidemic poliomyelitis the spinal fluid shows lymphocytosis, albumin, increase of pressure, sometimes fibrin, and mononuclears without microorganisms. In infantile paralysis the fluid is clear, without cellular elements and sterile. Encephalitis may simulate meningitis, but it appears in the course of an infectious malady; and the fluid drawn from the spinal canal is clear and contains no cells.

Inherited Syphilis from the Ophthalmological Standpoint. C. S. Bull (*Med. Rec.*, 1911, lxxix, 1) states that the cases of prenatal, intrauterine ocular syphilis, especially of the deeper tissues of the eye, are far more frequent than is usually supposed, and the intrauterine infection runs its destructive course much more rapidly than where the ocular infection develops after birth. It is a mistake to suppose that congenital syphilitic lesions of the eye run a mild course, for while some of these syphilitic infants are still-born or die in early infancy, many of the so-called *bad cases* live through infancy and childhood, but with very extensive ocular and aural stigmata. The ocular lesions may be confined to the lids and conjunctiva or cornea, or they may involve any or all of the deeper structures of the eye. In very young infants,

lesions of the uveal tract are more frequent than keratitis as evidence of congenital syphilis. Iritis at birth is not a very uncommon lesion, usually choroiditis of one or both eyes, which is always associated with the stigmata of defective nutrition and the signs of facial senility. The symptoms are often so slight as to escape casual observation, and this is especially true of the ciliary infection and the free exudation into the field of the pupil. In very young infants interstitial keratitis is very rare. When the disease occurs later in child life, the retina suffers but slightly. The writer has been particularly impressed by the extremely good visual acuity after an extensive choroiditis. This disproportion between the ophthalmoscopic findings and the actual visual acuity in the chorioiditis of childhood does not exist in the cases of retinitis and optic neuritis. The coincidence of interstitial keratitis and a vertically oval cornea is not infrequently observed in one or both eyes. This malformation of the cornea, however, like other stigmata of inherited syphilis, should not, when considered alone, be regarded as absolute proof of the disease. The ears may show scars or persisting perforation of the membrana tympani, or more or less complete destruction of the ossicula. A form of aural trouble without, appreciable lesion, undoubtedly due to inherited syphilis, is characterized by great suddenness of invasion and rapid course ending in absolute deafness in a few days or hours, and resisting permanently all treatment. Other syphilitic stigmata are frontal prominences, flattening and broadening of the bridge of the nose at its base, microdontism, in which some of the teeth are very small, and persistence of the first teeth far beyond the usual period. Where only one stigma exists the occurrence of stigmata in other members of the family is confirmatory. It is a paramount necessity to recognize the stigmata at the very earliest age, if we are to do anything for the restoration of useful vision. The writer advocates sterilization of persons who have presented undoubted evidences of constitutional syphilis in order to save the innocent and to prevent the degeneracy of the race.

Treatment of Infections of the Urinary Tract in Infancy and Childhood.—John Pardoe (*Pediatrics*, 1911, xxiii, 39) says that the acute autogenous infections with *bacillus coli* are less common in children than in adults. These acute infections show the same tendency to comparatively rapid and complete cure as is observed in older patients. The points upon which he relies chiefly in the treatment of acute cases are: absolute rest in bed; the induction of free diuresis by the use of alkaline waters, nitrous ether, ammonium acetate and squills; rendering the urine alkaline with potassium bicarbonate or citrate; urinary demulcents and sedatives to relieve burning micturition, *e.g.*, barley water or decoction of triticum repens, and oil of sandalwood; abstention from instrumental interference, and practically a milk diet. Chronic autogenous infections in children are also more rare than in adults. They also show the same intractability to treatment. The lines

upon which treatment should be pursued are: In mixed infections, particularly where the pyuria is considerable, thorough washing of the bladder with one of the mild antiseptics is useful, as it relieves the frequent desire and the pain after micturition. The drugs useful in the acute cases are also useful in these more chronic forms—benzoates, sandalwood oil, hyoscyamus in large doses; and when the infection is mixed with more pus-producing organisms, such as the staphylococci, *bacillus fæcalis*, and the like, urotropin, and similar drugs are of value. In these cases the use of a vaccine is of the greatest possible benefit. Chronic infections dependent upon, or occurring coincidentally with other conditions of the genito-urinary tract, show a much greater tendency to complete cure than is the case in adults, after the cause (that is, stone or obstruction of micturition) has been removed. The treatment then becomes the same as that of the autogenous infections. According to C. R. Box (*Pediatrics*, 1911, xxiii, 3) the main necessity in the treatment of colon bacillus infections of the urinary tract in infancy and childhood is to administer sufficient potassium citrate to make and keep the urine permanently alkaline, that is 10 to 20 grains three or four times daily. With this may be combined an antispasmodic drug, such as belladonna or hyoscyamus. He has not found the slightest benefit from antiseptic drugs in chronic cases.

Erysipelas in Babies.—Milhut and H. Stévenin (*Prog. méd.*, Jan., 28, 1911) describes certain unusual forms of erysipelas that are seen in babies. The first is a simple edema, local or general; this changes place; it may be soft or hard; the general condition is not bad and the fever not high. At the same time the prognosis is bad, almost always fatal. The other form begins with a small abscess which heals after incision, but is followed by other abscesses in some different location. Here too the prognosis is bad. In both these conditions there is nothing to make one think of erysipelas, neither the color of the skin, nor fever, nor bad general condition. If the child is carefully examined we are able to find at the periphery of the edematous regions a red line and a plaque of desquamation. Streptococci may be demonstrated in the edematous fluid. The edema extends very rapidly; in the same child we may find edematous portions, erythematous plaques, and desquamation in different regions. The streptococci find a good culture medium in the edematous fluid. They are also found in the pus of the abscesses. In infants under three months of age these forms of disease are almost always fatal.

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ORIGINAL COMMUNICATIONS.

THE CAUSE AND SIGNIFICANCE OF TUBAL RUPTURE IN EXTRAUTERINE PREGNANCY.*

BY

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THE work instituted by Tait in 1883 changed the subject of extrauterine pregnancy from one of pathologic interest to one of practical surgical importance. A long series of fatalities had already demonstrated the inefficiency of the non-operative treatment. The operative technic developed in abdominal surgery gave such results as to place extrauterine pregnancy in the list of surgical diseases. Perhaps no condition so universally evil in its results without surgery gives so uniformly good results with surgery applied at a seasonable time. At a time when the general practitioner as well as the surgeon had come to look upon this condition as one not for ice, or opium, or electricity, injections, or faith cure, but rather one for following the very plain and well-established law of surgery that when we have bleeding vessels they should be tied, it is unfortunate that the greatest setback should come not from the one who believes in unsound means of avoiding surgery, but from those who believe in surgery for this condition, but who believe that the most extreme conditions can safely await a more opportune time. It is because of the teachings of Robb, Simpson, and others recommending delay in the most urgent cases that the subject is worthy of reconsideration at this time.

* Read before the Detroit Meeting of the Mississippi Valley Medical Association, Oct. 1910.

Briefly, these points are offered by them, in support of their position.

1. The hemorrhage of extrauterine pregnancy may be counted upon to cease before a fatal amount of blood is lost.

2. That repeated hemoglobin tests are a practical and reliable guide as to whether operation can safely be delayed. (Robb.)

3. That experimental severing of the ovarian and uterine vessels in dogs (mostly non-preguant) have not resulted in death, even though a greater amount of blood were lost per body weight than is found in the abdomen of a woman with ruptured extrauterine pregnancy, and that, therefore, a woman does not die of hemorrhage even though the condition proves fatal.

4. That shock is a large element in the collapse of extrauterine pregnancy and that shock of operation added to shock of rupture and shock of blood in the abdominal cavity, will increase the fatalities.

5. That the common teaching that immediate operation is necessary in extreme cases throws the burden of operation upon an inexperienced operator.

6. That for the above reason the patient with hemorrhage and collapse should wait for the hemorrhage to cease, the blood volume to recuperate and the shock to subside.

I believe that I have stated the case accurately although no effort is made to obscure the conflicting statements in these conclusions. It would seem warranted and not unwise to make the following comments upon these teachings before proceeding to a consideration of the pathology of the condition:

1. The only warrantable excuse for such teaching would be a showing that women do not die as a result of extrauterine pregnancy, either from the absence of blood in the vessels or the presence of blood as foreign material in the abdomen, or both.

2. Women have died, are dying, and a study of pathology indicates that they will die without operation in cases of extrauterine pregnancy.

3. Women do not die of hemorrhage and collapse without passing through the stage which these teachings count unfit for operating.

4. There is nearly always a time between evidence of concealed hemorrhage and death when a safe operation could be performed if an operator is at hand, unless the area of hemorrhage

is beyond ligature control, which is not the case in extrauterine pregnancy.

5. If in every community there is not a medical man skilled enough to meet an emergency of this kind, we would better turn our energies to teaching emergency surgery rather than condemning operation in surgical emergencies.

6. All extrauterine pregnancies are not emergencies, but the greater the collapse, the greater the immediate need.

Robb claims that the woman does not die of hemorrhage but sits down with hemoglobinometer to test what? shock? No, to test the gain or loss in blood. "She does not die of hemorrhage," he says, "because the dogs lost a greater amount of blood per body weight than was lost by the woman with extrauterine pregnancy," but this counts very little in favor of the woman against the fact that she is dead. It is true that not every case goes into collapse with a first rupture, and it is also true that not every case that goes into extreme collapse dies, but if our teachers of the new school will admit that some die and that a first rupture is not the final result, the backbone of their contention is broken.

We have the statistics of Shauta, Martin, Parry, Gobiet, and a long list of other workers showing that women with this condition do die. Deaths occur in every community. It will be more profitable, however, to consider this after a brief consideration of the histology and pathology of extrauterine pregnancy.

The work of Peters and others shows that the impregnated ovum finds attachment not upon the surface of the organ to which it is attached, but by burrowing below the surface epithelium. There has been a tendency to look upon that connective tissue reaction known as decidual cell formation as a preparation of the maternal tissues to receive the ovum, but the finding of this reaction in the presence of other forms of irritation has led Hitschmann, Heinsius, Williams, Kromer, FÜth, Vaosmer and Raschkes and not a few others to consider the decidual cells as a protective reaction in the maternal tissues to resist the destructive and corroding influence of the parasitic ovum, or other irritation. Certain it is that in the uterus where a decidual reaction is marked the ovum does not penetrate to any great depth except in rare instances of poor decidual reaction, while in the tube which, to a certain extent, has lost its capacity for the abundant decidual reaction, the ovum is found penetrating the musculature, the trophoblast corroding the blood-vessel walls, etc., to the ex-

tent of producing hemorrhages around the ovum, and in some cases eating its way through the tube wall giving the tube a distinct punched out appearance rather than a lacerated appearance from overstretching. The ovum then growing in the wall of the tube and not in its lumen, in tissues made vascular by the presence of pregnancy, the trophoblast, destroying muscle cells and blood-vessel walls, growing in a portion of the Mullerian structure which has become differentiated into the egg-carrying portion rather than the ovum-bearing portion of the tract, and which, therefore, has lost its ability to keep place with the growth of the ovum, is a constant menace to the mother and suicidal to itself. This giving way of the tube-wall then is seen to be due first to the destructive action of the trophoblastic cells upon the maternal cells; second, to stretching due to formation of a hematoma around the ovum; third, to the stretching by the growing ovum; fourth, frequently some unusual effort or posture produces the tension which determines the rupture at that given time. This destruction of blood-vessel walls and tubal walls in the presence of increased vascularity furnishes histologic and pathologic foundation for the clinical observation that patients do die. It now remains to be seen why there is such wide variation when rupture is apparent, some dying within a few hours, some recovering readily to have a subsequent attack or subsequent attacks.

1. The ovum lying in the tube wall may give little, if any, discomfort and few, if any, symptoms for some time.

2. There is often, however, some little difficulty in the tube's adjusting itself to so unusual a visitor, so that a pulling, crowding, slight lancinating or tearing pain is felt, and possibly with this there are repeated very slight hemorrhages around the ovum, and the pseudo-reflexa, the portion of the tube wall lying between the ovum and the lumen is disturbed to such an extent that a little hemorrhage takes place into the lumen of the tube and this blood may find its way into the vagina or through the abdominal end of the tube into the peritoneal cavity.

3. The first marked rupture may result in a more or less sharp hemorrhage around the ovum, separating or partially separating the ovum from its tubal walls to cause them to give way and allow the ovum to escape from its bed. With this the patient has only a moderate amount of hemorrhage, and usually little, if any, shock, and is soon about. With this the ovum may die or may continue to live.

4. The growing ovum and the weakening tube may result in the tube walls giving way either as a primary rupture or secondary to a hemorrhage around the ovum. The ovum may have been alive up to this time or may have been dead. If alive, it may still retain sufficient attachments for blood supply and live, or it may die. The rupture of the tube wall may be complete or partial. The rupture may take place into the lumen of the tube or through the outer wall. With a rupture into the lumen of the tube the ovum may continue for a time in its bed or be displaced into the lumen of the tube, where it continues to lie as a dead or live ovum, or it may at the same time be aborted from the abdominal end of the tube into the peritoneal cavity, or it may abort into the uterus if located in the uterine portion of the tube. An ovum that has been aborted into the lumen may later whether dead or alive, abort from the tube or rupture through the wall of the tube. If alive it may continue to live after these secondary disturbances. If the primary or secondary rupture takes place outward, the rupture may be between the layers of the broad ligament or toward the peritoneal cavity; in the latter case all the walls are apt to give way, but the peritoneum may be pushed ahead of the mass causing a herniated condition in which case the peritoneum will likely give way with a future rupture. The ovum may escape from the tube between the layers of the broad ligament, and lie dead in a mass of debris or continue to live, retaining much or little of its tubal attachments. It is now not beyond the risk of another dangerous rupture into the peritoneal cavity, or bladder, or rectum. In case the rupture of the tube is into the peritoneal cavity the ovum may still lie in the tube almost completely, or partially, awaiting another rupture, or it may be thrown entirely into the peritoneal cavity. In case of complete rupture the ovum and blood may find free access to the peritoneal cavity, or what is more fortunate for the life of the woman, they may be met by a more or less complete wall of adhesions and viscera. Here a fatal amount of blood may be lost, or hemorrhage may be checked by clotting favored by the wall, only to recur when the tension increases and the wall gives way. Sometimes blood is found in all parts of the abdominal cavity, with little tendency to clot. Sometimes an enormous amount of blood is lost, although localized by a more or less complete wall. If hemorrhage is checked, so that the patient lives, there begins a corroding destructive process of

the ovum upon the walls, the bladder, the bowel, the omentum, etc. This foreign material runs great risk of infection with localized or general peritoneal infection, septicemia or pyemia. Occasionally the ovum lives and gives little trouble after the primary or secondary rupture and continues to term. The tube has been known to keep pace with the growth of the ovum and no rupture take place, but these are rare exceptions and in no way to be counted upon. It will be seen then that from the very nature of the pathology, a rupture is to be excepted, that hemorrhage may be the cause of rupture, and hemorrhage also follows a rupture, that the hemorrhage is variable in degree according to the location and extent of rupture, and the clotting ability and the resistance met, etc. We read about *the* rupture as though there were only one, and, as it has been shown that patients sometimes recover from the first rupture, it has been concluded that extrauterine pregnancy is not fatal. It is only *the* rupture when it proves fatal. If a patient lives, it is only *a* rupture and another is almost certain to follow, and *yet another*, and a given rupture may be very insignificant as compared with one that is to follow, nor does this mildness or severity of the first rupture tell us when the second attack will take place. When Schauta says that 86.89 per cent. of 121 cases treated palliatively died and A. Martin 63.1 per cent. of 265, and Coston 84.4 per cent., and Parry 174 deaths, and Newell 81.4 per cent. of 69 cases, they are dealing with final results. When we are told that patients have recovered from a rupture of extrauterine pregnancy to have the diagnosis verified by operation later, the palliative treatment did not here deal with the final results, it dealt with *a* rupture leaving the patient to contend with a future one.

Destruction of tissue, hemorrhage, rupture, more hemorrhage, secondary rupture, more hemorrhage, etc., thrombosis, embolism, sepsis, is an incomplete list of the dangers that face a woman that has an attached extrauterine pregnancy. No one can tell with a degree of certainty whether the rupture will prove fatal, Robb's experiments to the contrary notwithstanding. No one can accurately diagnose as to whether it is in the broad ligament or in the abdomen. In extreme cases with primary or subsequent rupture it is unsafe to assume that hemorrhage is checked or that it will cease, *for some die*. If improvement in the patient's condition indicated cessation of the hemorrhage, no one could make a reasonable guess as to when the next rupture

would take place, or when the hemorrhage would return or whether the next hemorrhage would prove fatal. Bold, indeed, is the man who can sit down beside a woman with internal hemorrhage and ignore the fundamental principle of surgery that a bleeding vessel should be tied, and with hemoglobinometer in hand undertake to say when the red blood cells contain enough coloring matter that she will live and when they contain little enough that she will die. This is a surgical condition. With knowledge and preparedness the only excuse for not operating is that the patient is too weak. What then if several hours with the hemoglobinometer shows a decrease in hemoglobin, and if this is not one of the possibilities wherein lies the need of such a test. And if it shows a gain after several hours of waiting does it do more than show us that we have not yet been overtaken by the fatal delay? Does it tell us that while we are waiting the patient will not have a fatal return? This unhappy result is recorded.

The pathology of extrauterine pregnancy points out the great danger to the patient from the welfare of attachment until the ovum is removed. The moment of the ovum does not have to be considered except during the late months when the interest of the mother and child are one, namely, separation. Efforts to kill the ovum are entirely unworthy of consideration as the dead ovum is only slightly less dangerous than the living. A large majority of extrauterine pregnancies operated upon show the ovum to have been dead sometime and the tubal mass to have enlarged by concentric layers of organized blood clot. The only final rational treatment based upon known pathology and clinical observation is surgery. A recovery by any other treatment is a matter of great and accidental good fortune. The choice of time in the light of the pathology should be the earliest possible time that an operation can be arranged that is consistent with the patient's need. Ideal conditions if possible, but we should be willing to sacrifice ideals if the case is more urgent and, instead of delay for more favored conditions in desperate cases, the more desperate the case the more urgent the operation. I have never seen a patient die from extrauterine pregnancy operated upon even in a collapsed condition, but I have seen them dead without operation. I, of course, do not deny fatal results after operation, but the mortality rate is increased by waiting. Cases are reported that died in the hospital while waiting a more favorable moment. If a

patient with ruptured extrauterine pregnancy is in a desperate condition it is not because she has had a fright or merely a tear, nor because she has had a railroad accident, it is because she has really lost blood and whether she continues to lose blood is to us somewhat a hidden matter. If the blood is being lost anything short of clamp or ligature control is unworthy modern surgery. With marked evidences of internal hemorrhage in the face of uncertainty as to present bleeding, the treatment, must be the same. A study of the cause and significance of rupture points to this as the only rational treatment as certainly as the southward migration of our feathered kindred points to coming winter.

In conclusion:

1. Pregnancy, which is considered to be always extrauterine in the beginning assumes pathologic significance when it undergoes ectopic attachment.
2. The ovum attached in the tube has a parasitic action, having a malignant tendency in that it destroys maternal tissues, imbeds itself in the tube wall and tends toward death of the mother, but in "making its bed digs its own grave."
3. The growth of the ovum or enlargement of the dead ovum mass, together with the destruction and thinning of the tube wall leads to almost certain rupture of the tube.
4. The primary rupture may be partial and even slight, or it may be complete and even fatal.
5. If incomplete, a subsequent rupture or subsequent ruptures are the rule.
6. With rupture free hemorrhage more or less severe occurs, which is never to be looked upon lightly and which may prove fatal.
7. The loss of blood may be through one rapid fatal hemorrhage or there may be a series of lesser hemorrhages.
8. If the patient does not succumb to loss of blood the presence of blood and the ovum in the abdominal cavity act as irritating foreign substances leading to loss of function and pathologic changes in the viscera, and perhaps to local or general infection, thrombosis, embolism, etc.
9. The dead ovum is only slightly less harmful from the standpoint of rupture than the live one, and may be even more harmful from the standpoint of infection.
10. A study of the pathology makes all treatment looking toward killing the ovum appear irrational.

11. Patients in good condition with or without ruptures are almost certain to have future trouble and should have an operation as soon as it is consistent with good work.

12. Patients in bad condition with concealed hemorrhage from the cause in question have collapse in proportion to the amount of blood lost and rational treatment must look with certainty toward the stopping of further hemorrhage.

13. An opening of the abdomen with clamping or ligation of the vessels is the only reliable means of controlling internal hemorrhage and if done rapidly and with care is little tax upon the patient.

14. The clinical experience of the world and a study of the pathology of this condition points to the danger of delay.

15. The more desperate the case while the patient yet lives, the greater the call for immediate action.

100 STATE STREET.

THE UNFAVORABLE INFLUENCE OF PREGNANCY UPON CHRONIC PROGRESSIVE DEAFNESS.*

BY

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THE influence of pregnancy upon the special senses barely needs mention. Taste, the sense of smell, the eyesight, even sensation may show deviations from the normal and grotesque expression during the period of gestation. This fact is well known and is the subject of comment in practically every text-book of obstetrics. But the effect of pregnancy upon hearing and deafness has been singularly omitted from discussions of this character except for the most fleeting references comprising a sentence or a portion of a sentence. Obstetric and gynecological literature is especially free from comment upon the relation between these functions; and for what information there is one must seek the writings of the otologists. Even such voluminous works as those of Kisch(1) and Senator and Kaminer(2) do not mention the diseases in their relation to gynecological conditions or the pregnant state. Out of thirteen text-books of obstetrics in use in the medical schools of the United States at present, three devote one sentence to the subject; out of nine in use in Great Britain, one mentions the subject; out of

*Read before the New York Obstetrical Society, February 14, 1911.

eight German text-books, one refers to it; out of five French books, two speak of it. So much for the paucity of the literature.

To deviate from our immediate theme for a moment, it will be interesting to note the observations made upon the sexual life of woman generally in its relation to aural function. Weber-Liel(3) has noted a case of diminished hearing due to masturbation, which disappeared after the habit had been cured. He also describes cases of ovarian hyperesthesia in which there was ringing of the ears. Pagenstecher(4) speaks of a case of otalgia due to cessation of the menses. He also refers to vicarious menstruation through the ears, whether these are perforated or not. Wolf(5) has observed alterations of hearing in women with parametritis; but so far as I know, this observation stands alone. Baratoux(6) concludes a lengthy paper by saying that in those cases in which there is a purulent middle-ear suppuration, the local affection is aggravated by menstruation and that, in these cases, vicarious menstruation may take place from the ear. He also notes that a feeling of tightness in the head with disturbance of hearing may appear in consequence of suppression of the menstruation and at the beginning of the menopause.* This he ascribes to congestion. Morland(7) reports the case of a woman who became deaf immediately following a miscarriage. Subsequently she heard better during her various pregnancies but lost her hearing again immediately after delivery. She was also more than usually deaf during her menstruation. He quotes Scanzoni, who had observed variations in hearing after the applications of leeches to the vagina. McArdle(8) discussed the same theme, but brought out nothing that has not already been mentioned. Dr. Alfred Wiener, of this city, also informs me that he has observed that in cases of preexisting aural disease, excessive sexual indulgence is an important factor in augmenting the disease.

Turning now from these general considerations to our more immediate subject, I will state that otologists, who naturally see many more cases of aural disease with their complications than gynecologists do, have long ago noted that the disease known as otosclerosis or chronic progressive deafness very often becomes markedly worse during pregnancy. The general proposition would read: *From the inception of pregnancy, hearing becomes worse; at the end of pregnancy, it does not improve; with each succeeding pregnancy, the deafness becomes*

*See also Gradenigo in Blau's Encyclopedia.

more intense. These clinical facts I hope to establish by the narration of my cases. But I shall first review the existing literature in order that the facts may have appropriate foundation. In his Paris thesis on the "Deafness of Pregnancy," Pegot(9) declares that Hippocrates was aware of the influence of pregnancy upon the hearing. He quotes Gregorius Horatius (1660), and Pacillini (1707), who described the same condition. He also refers to Portal (1812), who reported the case of a patient deaf during her first three pregnancies but not in her fourth. He likewise quotes Ménière, who states that pregnant women with otitis media may recover like women who are not pregnant, without complications and ending in a cure; but the majority of such women suffer from an aggravation of the ear disease during pregnancy. Pegot's own conclusions are that pregnancy has a deleterious effect upon existing lesions, but that a progressive deafness may be favorably influenced by delivery, which can even bring about a diminution of the deafness. From his study, he also believes that deafness may arise during nursing, gestation, delivery and the puerperium being normal. He also thinks that deafness may arise *de novo* during pregnancy, no previous aural disease having existed.

So eminent an authority as Schwarze(10) declares that disturbances of hearing during pregnancy are not very rare, although the cause cannot always be demonstrated. Trautmann(11) asserts that hemorrhage from the ear during pregnancy may occur with subsequent deafness. He explains this phenomenon as being due in some instances to exacerbations of cardiac disease which, as is known, appear during gestation. Bezold(12) found that in 17.9 per cent. of his cases the beginning or decided increase in deafness was found after pregnancy or the puerperium in women who had had a chronic otitis media. Lucae(13) remarks that the beginning of deafness is often attributed by women to pregnancy or the puerperium, and dwells upon the fact that it may arise from an unusual loss of blood in anemic women. All the authors quoted, however, state that women are especially prone to date trouble of any kind to their gestation or its sequels, so that one must be careful about accepting their statements without careful investigation; but Lucae recognizes the postpartum and gestational increase of deafness in women who have had catarrhal or purulent otitis.

A sceptical note is sounded by P. Müller(14) the obstetrician, who writes: "Pregnancy is not infrequently accompanied

by ringing in the ears which disappears after labor. Von Siebold tells of a case of complete deafness which disappeared." Müller doubts whether pregnancy can be ascribed as an etiological factor in acute and chronic middle-ear inflammation. The puerperium, he says, is sometimes accompanied by disturbances of hearing due to metrorrhagia or sepsis. Following these, there may be deafness of obscure origin. I am not inclined to share Müller's scepticism for the reason previously given, that obstetricians see these cases much more rarely than do the otologists.

Etiology.—In discussing the etiology, I refer only to the causation of increasing deafness by the advent of pregnancy. In all cases of this character, syphilis must be positively excluded before placing the blame for the progressive deafness upon the pregnancy. Many otologists believe syphilis to be responsible for the condition. Thus Denker,(15) Bezold,(16) and Habermann(17) assert that syphilis of the bone-conducting apparatus may cause a stapes ankylosis resulting in deafness. Lucae as well draws attention to this fact. Excluding syphilis, however, other theories have been advanced; none, I admit, very satisfactory. It has been suggested that osteophytes may be formed during pregnancy and the puerperium in the squamous portion of the temporal bone (Denker, Siebermann). Schwarze (*loc. cit.*) says it is not always easy to determine the relation between the uterine affections and the ear. There may be anemias, or severe hemorrhages, or actual inflammation of the labyrinth analogous to those that appear in the kidneys during pregnancy. When sudden deafness after delivery is complained of, investigation will show the former presence of a chronic catarrhal otitis with extension to the inner ear, whose course is hastened by the pregnancy and puerperium, which act in a depleting way. Trautmann(18) believes the cause of deafness coincident with or following pregnancy to be unknown, although he says that hemorrhage in the ear can occur with subsequent deafness due to exacerbations of cardiac disease during the pregnancy. Ménière(19) believes that the congestion of pregnancy, delivery and lactation evoke a proliferation of connective tissue in the ear due to a transudation of serum and white cells. This is followed by organization and tissue sclerosis. He also believes in an individual heredity (which in Lucae's cases amounted to 37 per cent.), and to predisposition. Pegot (*loc. cit.*) has suggested as a causative factor the autointoxication of pregnancy, the

preexisting lesions being aggravated by toxins; or, he thinks, the deafness may arise *de novo* through the influence of the toxic elements in the blood. Lichtenberg(21) suggests that the deafness may arise from an albuminuria of pregnancy.

Whatever the relationship between pregnancy and an increasing deafness shall eventually prove to be, it is definitely settled that it can appear only on the basis of a preexisting aural disease, the exact nature of which is not yet decided, although a history of previous otitis is usually to be elicited.

Frequency.—In his book on otosclerosis, Denker estimates that chronic progressive deafness varies from 58 to 66 per cent. out of all cases in women (306 cases). Hartmann, quoted by Denker, found eighteen out of thirty-three cases to be women, while Walb asserts, without giving figures, that it occurs more often in the female sex, but Lucae, on the other hand, out of 733 cases, found the proportion of men and women fairly even (women, 48 per cent.; men, 52 per cent.). There are, however, no available figures to show what percentage of women with previous ear disease become deaf during pregnancy.

Case Reports.—My own cases are two in number, both instances of chronic progressive deafness and both showing marked deterioration during pregnancy.

CASE I.—Mrs. H., twenty-six years of age, married five years. Menstrual history negative, and bears no relation to the aural difficulty. Has had two children, the last one and a half years ago. Normal pregnancies and labors. Has never had scarlet fever or diphtheria. Before marriage, without any previous acute infectious disease or disease of the ears, the patient noticed that her hearing was becoming impaired. During her first pregnancy, the deafness became much more pronounced, beginning with the early months of pregnancy and increasing steadily during the entire time of gestation. Shortly afterward she again became pregnant and noticed at once that her hearing became worse, and there was, at the same time, tinnitus. Abortion was induced at this time in order to save the amount of aural function possible. During her second pregnancy, the hearing again became diminished as soon as pregnancy occurred—in fact, the patient was certain that she was gravid because of the tinnitus and the increasing impairment. I saw her first on the fifteenth of July, 1910. She was then about five weeks pregnant, and complained that her hearing had grown distinctly worse during the past three weeks. After a consultation with her physician, Dr. Richard Weil, it was decided to empty the uterus, which was done at Mount Sinai Hospital on July 16. During her stay in the hospital, her hearing was slightly improved,

but this was only temporary and it soon became as bad as it had previously been. She is at present very deaf, and has been practising lip reading to enable her to understand conversation. The patient's grandfather, a male cousin, and a sister suffer from deafness. The sister's hearing, however, improves after pregnancy, and is not of the chronic progressive type.

This is a case of chronic progressive deafness, originating on a hereditary basis and becoming markedly and distinctly more intense with each succeeding pregnancy.

The following auditory examination has been kindly furnished to me by Dr. Fred. Whiting who has had her under observation for some years:

Examination Feb. 17, 1907.

Hearing impaired for nine years or more. Is now pregnant. Hearing greatly reduced since pregnancy began. The auricles are negative. The meati are normal. There is a characteristic appearance of otosclerosis: the membranes are very thin and atrophic in places. The tonsils are small, adenoids are insignificant, the septum nasi is good. There is some hypertrophic rhinitis. The Eustachian tubes are well open, the mastoids are negative.

Functional Examination.

Tone Limits.	R.	{	Upper, Galton 1.25	L.	{	Upper, Galton 1.25
			Lower, 64 v. s.			Lower, 512 v. s.

May 8, 1907. Patient has had abortion performed and her hearing now is

Watch	{	R. O by all.
		L. O by all.
Acoumeter	{	R. 1/2 inch.
		L. Uncertain.

Tuning fork same as Feb. 17, 1907.

This examination does not indicate *advanced* labyrinthine participation in connection with the chronic ear deafness although the involvement of the labyrinth is plainly evident.

CASE II.—Mrs. W., aged thirty-one years, married nine years. She has had one child eight years ago, after a normal labor. At six months of age the patient had scarlet fever and had an otorrhea following it until she was five years old. Her hearing has always been impaired, but became very much worse during her pregnancy and was further impaired after delivery. As soon as the patient became pregnant, her ears began to discharge. During the years since the birth of her child, her hearing has become progressively worse until now she has to depend upon lip reading and a loud voice in her ordinary conversation. On the advice of her physicians, this patient has not since become pregnant.

Dr. E. Gruening, who has had the patient under observation since 1907, has been kind enough to give me these notes of his examination when he first saw her. "She has large defects in both drumheads, the result of purulent otitis media in childhood. She hears a faint whisper with either ear at a distance of 5 feet. The watch is 6/36, *i.e.*, a watch heard by a normal ear at 36 inches was heard by her at 6 inches. The ears were dry at this time."

This is a case of chronic progressive deafness originating in childhood as the result of an acute infectious disease, and becoming definitely and distinctly worse as the result of pregnancy.

The notes on the following case have been furnished to me by my friend Dr. Robert T. Frank, who has had the patient under observation:

Mrs. S. P., first seen in April, 1908, aged thirty-four, married eight years, has one child six years old, and no abortions. First menstruation at seventeen years, the last on August 21, 1907. Menstruation four-weekly, seven days, moderate. Predicted day of confinement May 28, 1908.

During the later months of her first pregnancy, the patient grew hard of hearing. After pregnancy the hearing improved somewhat, but never more than to half the acuity. One sister (there are three) had exactly the same history. For the first six months of the present pregnancy she felt well. Since then she suffers from a general pruritus which has resisted all measures. She has had no headache or edema; there is no leukorrhea; the bowels are constipated, urine is slightly increased in frequency. Fetal movements have been felt since four and a half months of pregnancy. For the last month *the deafness is again growing worse.*

Examination showed a normal pregnancy of about eight to eight and a quarter months, fetal heart is L. O. A. She was delivered spontaneously on June 2, 1908. Puerperium normal. After labor the hearing showed no improvement. It was less acute than in April. Only loudly spoken words were heard, uttered about 12 inches from the ears. On December 8, 1908, the hearing was found improved, but only to a slight degree. On December 29, 1909, the patient considered herself pregnant as she was a few days overdue, had nausea and pruritis. She believed her hearing was still more affected. In view of the circumstances, abortion was induced on January 27, 1910, in the eighth or ninth week of pregnancy. During the month of observation the hearing has rapidly deteriorated, so that only words shouted quite loudly close to the ear are recognized. Frequent urinary examinations always proved negative.

Dr. Joseph Brettauer has given me the notes of four cases occurring in his practice. Briefly condensed, the report shows that two of the patients became deaf as a result of typhoid fever, and in each instance the hearing became worse during pregnancy, becoming better, however, after delivery. It is likely that these were not cases of chronic progressive deafness. In the other two cases, the deafness became so marked during the early weeks of pregnancy that it was considered a sufficient indication for the induction of abortion.

Dr. William P. Healy has kindly given me the notes of this case which he has observed.

Mrs. N. B. C., aged thirty-three years, i-para, noticed about four years ago that she was getting deaf. Its onset was gradual and without discoverable cause. She had scarlatina in infancy without ear complications. The patient became pregnant early in 1910, and was delivered at term in October, 1910. In the early months of her pregnancy she noticed that her hearing became reduced. An examination by Dr. John McCoy disclosed complete deafness in the right ear and beginning deafness in the left. There is no doubt in the patient's mind that her hearing became decidedly reduced during her pregnancy. Since her delivery, it has remained as it was immediately following that event.

This is a case of chronic progressive deafness (otosclerosis) made worse by a supervening pregnancy.

Treatment.—My suggestions have to do solely with the obstetrical treatment of this condition. Given a woman who is growing progressively more deaf as a result of a chronic disease of the ears, and whose aural condition is conclusively made worse by a supervening pregnancy, the induction of abortion becomes a legitimate procedure. But the obstetrician must not permit himself to be grossly misled or deceived by the patient's complaints since they are necessarily entirely subjective. A therapeutic abortion is to be decided upon only after a consultation and if possible an aural examination by the same aurist who has previously tested the patient's hearing. If at the time of the patient's first coming under observation, the hearing is already very badly impaired, and has shown signs of becoming worse before pregnancy began, the gestation should be allowed to proceed to term, as no benefit can then be expected by an interruption of the pregnancy; that is, the hearing will not be better after the performance of the abortion, nor can the aural function be preserved by an abortion.

Another element to be considered, concerning which I am not yet decided, is to sterilize these women after one or two pregnancies by ligating the tubes. It is a serious question, indeed, whether one is justified in destroying one physical function in order to preserve another. Yet we would not hesitate to save eyesight, if it were necessary to do so, by preventing a future pregnancy, and it is a debatable point whether we should not sterilize a woman who is threatened with total loss of hearing if we were certain that continued pregnancies would bring about this result. On the other hand, before undertaking such an operation with its attendant although minimal risk, we must be certain that the deafness would not proceed to totality without the intervention of pregnancy.

Cases may present themselves in which the reduction of hearing becomes infinitely more rapid with the advent of each pregnancy and in which the diminution is exceedingly slow or is scarcely perceptible by the patient when she is not pregnant. These would be the instances in which the induction of sterility might seriously be considered after the birth of one or two children. But in those patients in whom the hearing is only slightly affected by pregnancy and who experience an improvement after delivery,

no operation should be undertaken which would have for its object the prevention of pregnancy.

SUMMARY.

I. The influence of pregnancy on women who are suffering or have suffered from otosclerosis or chronic progressive deafness is a deleterious one, although the pathological process is by no means clear.

II. The deafness increases immediately upon the advent of pregnancy, grows worse during gestation and remains permanently worse after delivery than it was before pregnancy began.

III. Repeated pregnancies have the effect of rendering the hearing progressively worse.

IV. The interruption of pregnancy may preserve the hearing existing at the time; but it may accomplish no more than this; that is, the hearing may subsequently continue to deteriorate.

V. The obstetric treatment is the induction of abortion early in pregnancy after it has been established unquestionably that the pregnancy is causing the hearing to become diminished.

VI. The right to render these women sterile is one that depends upon individual cases and is a debatable question.

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136 WEST EIGHTY-FIFTH STREET.

THE INFLUENCE OF THE AUTOMOBILE UPON OBSTETRICAL AND GYNECOLOGICAL CONDITIONS.*

BY

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THE ever-increasing use of motor-propelled vehicles for pleasure and commercial purposes in the past decade carries with it a new factor in modern life, which must be reckoned with in its influence upon obstetric and gynecologic conditions.

Little has been published upon the subject.

Aside from a paper in France on the "Influence of Automobilmism on Obstetrical Practice" (Fieux: *Jour. de Med. de Bordeaux*, Oct. 28, 1906), another in German indexed to appear in the *Centralblatt für Gynecologie* of 1907 on "The Automobile in Obstetrics: and still another on "Motor Car Miscarriage" (E. P. Davis, *Medical Record*, 1909, Jan. 30), little if anything has been published. The German paper, although indexed to appear as above, in 1907, cannot be found. The *Index Medicus* contains no reference to it, nor does any other reference work.

Scattered allusions in medical literature are to be found upon the influence of the motor cars upon hygiene, nutrition in general, sensitive nervous states and the like.

Several collateral subjects are opened up, as "Visual Requirements of Chauffeurs" (*Jour. de Med. de Brux.*, 1908); "Psychology of the Chauffeur" (Näcke: *Arch. für Kriminal Anthropol.*, 1904, xvi, pp. 325); "Automobile Inquiries" (Zimmer: *Deutsch Zeitscher für Chirurgie*, 1908, xcv). Le Gendre (*Bull. General de Therapeutique*, 1906, vol. clü, p. 622) made a study in 1893-4 of the bicycle from the standpoint of hygiene and treatment of disease, and in 1906 made similar observations regarding the automobile. Le Gendre does not refer at all to any injurious effects in his second paper. He claims that in a study of the hygienic and therapeutic value of the motor car many factors must be reckoned with, as speed, vibration, the douche of the air striking the face, chilling, dust, prolonged sedentary position, etc., the results being physical, psychical, and possibly at times pathological.

*Read before the New York Obstetrical Society, February 14, 1911.

Tolerance to the cooling of the face quickly results, but he claims that an over-sensitiveness to cold seems to be caused by automobilism.

The mucosæ of the nose, mouth, and throat are not damaged, while severe cases of pharyngitis and tonsillitis were even benefited. Acute laryngitis and bronchitis are made worse. In chronic bronchitis, it should be determined whether emphysema or asthma are present. In these latter, while not actually contraindicated, the motor car should proceed at a low speed. In asthma of purely nervous origin, motoring often benefits. Severe asthmatic attacks that have resisted other measures have yielded to an automobile ride.

Febrile tuberculous patients and those predisposed to hemorrhage should be forbidden the automobile. Other tubercular cases are not amenable to any general law. Anemia and chlorosis are benefited.

Compensated heart lesions do not contraindicate the automobile. Diseases of the aorta, great vessels, and aneurysm naturally do.

Le Gendre reports a case of neuralgia of the heart or false angina pectoris which seemed to have been produced by the automobile, but as the patient was a heavy smoker and dyspeptic this diagnosis was uncertain. The disorder ceased, however, when he gave up driving his car. Varicose veins and hemorrhoids were made worse.

Disorders of nutrition as gout, lithemia, rheumatism, as a result of the increased interchange of gases improve greatly.

The effects of the automobile upon the neurasthenic and psychasthenic states seem to vary greatly. It has been even claimed that the automobile prevents epileptic paroxysms, but Le Gendre doubts this.

Mouneyrat (*Comp. Rend. Acad. de Sciences*, June 3, 1907, vol. cxliv, p. 1241) made a study of the "Influence of Rapid Displacement of Air as Provoked by the Automobile on Nutrition in General."

His observations were made in journeys through the country lasting a week or ten days, and travelling on an average about (40 miles) per hour. Only spring and summer months were chosen. His findings sought were those of the blood and urine. As a result of the rapid displacement of air, the red blood cells and hemoglobin increased strikingly. The same results were obtained in anemic subjects.

The urinary findings indicated, in general, increase of nutrition.

Both the normal subject and the neurasthenic slept better, and this could hardly be attributed to the fatigue of the long journey, it being doubtless due to the out-door life.

There is a popular belief that in street accidents more persons are killed and injured by automobiles than by horse-drawn vehicles.

In New York City, during 1910, according to the report of the National Highways Protective Society, of the 373 deaths from street vehicle traffic, 104 were due to automobiles, 111 to street cars, and 158 to wagons.

During the same period 607 were injured by automobiles, 218 by street cars, and 105 by wagons.

The secretary of the society, however, attributed the comparatively small number reported as injured by wagons to the fact that minor injuries in accidents of this kind are not reported.

In a consideration of the influence of the automobile upon pregnancy, normal menstruation, dysmenorrhea, menorrhagia, subinvolution, uterine displacements, ovarian, tubal, periuterine, appendicial, vesical or rectal inflammation, the query naturally arises: How does the influence of the motor car differ from the ordinary horse-drawn vehicle?

1. *In the first place, I believe we are safe in assuming that there is, broadly speaking, more traumatism, more vibration, more jars associated with the motor car than with the horse-drawn vehicle.*

It is hard to conceive that the traumatism will differ in the two varieties of conveyances traveling over the same road, at the same speed, and for an equal length of time. Undoubtedly under such conditions the vibrations and jars would be less in the motor car by reason of the pneumatic tires.

The all-important difference between the two methods of conveyance is the *frequency* of the vibrations and jars.

It can be readily seen how ever mile added to the average speed that a horse would travel will diminish the intervals between the vibrations and jars.

Therefore much will depend upon the character of the road-bed, the speed of the automobile, and the character of its springs.

Jars are naturally greater in cars that have an overhanging rear seat, where the woman usually sits, and hence in recent years has appeared the close-coupled car, with the rear seat nearer the middle of the car, to diminish this very objection to automobiling.

The argument has been advanced that women traveling in pioneer days by springless prairie schooner across the western plains are not believed to have suffered materially thereby.

Nor do I believe that they did.

But even a springless prairie schooner drawn by the lazy oxen at four miles an hour is not to be compared as regards suddenness and frequency of jars to an automobile doing its forty miles an hour over the average American country road of to-day.

Photographs of rapidly moving motor cars prove that jars are at times so severe as to cause all four wheels to leave the road at once.

So there is some truth in the popular expression of the day that the automobile is only touching the high places of the roadway.

2. Another fact, and possibly less important, is that the distance traversed at one sitting is almost invariably greater with the motor car than with the horse-drawn vehicle.

One can scarcely believe that a ride in a Fifth Avenue omnibus from seventy-second street to twenty-third street differs materially, so far as the mere physical influences go, from traversing the same distance in a horse-drawn vehicle.

But the use of the motor car is seldom limited to such short distances, or to the speed of the horse-drawn vehicle, for while an ordinary shopping tour about the city may not differ essentially in the two types of vehicles, still the saving of time with the use of the automobile often permits of several turns about the Park, or a run into the suburbs, which would not be possible with the slower horse-drawn vehicle.

It is nothing uncommon for patients to motor into town from their country places, thirty or forty miles away, and then spend a couple of hours shopping. This would be impossible with horses. I can see no differences physically between equal distances traversed in the two types of vehicles, provided that a moderate rate of speed is used with the automobile, but it is exceptional that the chauffeur will, or can be compelled, to travel at what to-day is termed slow speed. Hence it is fatigue, often unconsciously produced, with which we must reckon.

It may be questioned at this point wherein lies the difference between a ride of, say eighty to a hundred miles, taken by railway in a so-called parlor car and the same distance traversed in an automobile.

The answer lies in the fact that, aside from nervous tension

produced in one class of individuals, there is actual physical fatigue caused, on American roads at least, by such a distance traveled by automobile.

If any one has any doubt about this matter, it can readily be tested out by comparing the seventy-mile run between New York and New Haven first by rail and then by motor car.

Aside from nervous strain, again, the same distance traveled at moderate speed over the almost perfect road-beds of the Continent of Europe will produce little if any fatigue. But then the present condition of the Boston Post Road is not to be mentioned in the same breath with the average turnpike of England or the Continent.

The third and possibly the most important difference between the two types of conveyance is the effect upon the nervous and circulatory system.

Regarding the influence of motoring upon the nervous and circulatory systems, one is readily able to differentiate two distinct classes and this applies to both sexes.

In one, little if any disturbance is produced; such individuals remain tranquil during high speed, are not readily fatigued by long runs, and are only temporarily, if at all, disturbed by minor accidents of the road.

Such women can usually be allowed with safety to motor during pregnancy, provided they be impressed with the importance that each run shall not result in actual physical fatigue and that they abstain from the use of the automobile during the periods which correspond to their menstrual periods.

In a second class of cases will be found individuals who never can adjust themselves mentally to the use of the automobile for more than short runs at low speed.

Such women may be fearless as regards horses, but a speed of over fifteen or twenty miles in a motor car causes actual mental suffering, nervous excitement and circulatory disturbances, the last often accompanied by tachycardia extending into the night and causing insomnia.

Such patients while on the road sit with tense muscles, rarely relaxing, which tenseness increases with the passage of an approaching car.

They are constantly on the lookout for trouble; they measure the distance with the eye between the hubs of passing cars and their own; each curve in the road hides a disaster beyond; a grade crossing is nothing short of mental agony and innumer-

able possibilities of wreck are conjured up from road-side ditches, trees, and telegraph poles.

It is not difficult to understand the unfavorable influence upon pregnancy, pelvic congestion and inflammation in such individuals as the foregoing.

This is no fanciful picture but an actual clinical fact.

There is abundant evidence to prove that the same mental and circulatory disturbances occur in some of the male sex.

A patient of mine, a gentleman who has owned and driven several high-powered touring cars in the past six years, who took to motoring not only for pleasure but on account of his general health, confessed to me that he suffered nothing short of mental torture when riding for any distance in a car that he is not himself driving.

When he is his own driver no disturbance of any kind results, but a forty-mile run, his mechanic or a friend driving instead of himself, results in physical and mental excitement, fatigue, tachycardia, and insomnia.

Twice has this patient when riding beside me while I was driving my own car accused me of speeding and reckless driving, when the speedometer showed we were well under his own usual speed in traveling.

In another instance, that of a physician, the automobile is almost prohibitory unless he is himself the driver, on account of the reaction resulting from the physical and mental strain.

He has been using motor cars in his business almost since their introduction, almost invariably driving his own car.

As his own driver he experiences no physical or mental strain and no unpleasant results from the ordinary daily use of motor cars.

But he freely confesses that he can never adjust himself to the use of even a taxicab about town; that he constantly finds himself with his muscles set ready for a crash; to his mental vision each side street contains an approaching motor intent upon a collision; each approach to a street car crossing the possibility of the brakes failing; and wet pavements all the dire possibilities of a skidding car.

Two short motor trips on the continent of Europe undertaken for pleasure were practically failures because of his idiosyncrasy.

And yet this same physician daily drives his motor car through the traffic of a large city, rarely finds it fatiguing, never exciting, rather a restful recreation than otherwise.

In summing up the differences between the horse and motor vehicles, we have to reckon with greater traumatism, more frequent vibration or jars, and in a certain class of patients the marked influence upon the nervous and circulatory systems in the latter mode of conveyance. In addition the tendency to travel a greater distance at one sitting with the motor car, with its possible actual physical fatigue is always present.

For the purposes of this paper, motoring may conveniently be divided into, first, *moderate*, in which, say, from ten to thirty miles are covered in a day over ordinary roads, and at an ordinary speed of from ten to twenty miles an hour.

This would represent the average run from an out-lying country place in Westchester, Long Island, or New Jersey to the city, or the reverse. I do not recognize any clinical difference in the use of the motor car over smooth city or suburban pavement from that of the horse vehicle.

The second or excessive degree of motoring would represent a return trip between an out-lying country place and the city in the same day or a straight non-stop run, say from New York to New Haven.

The effect of automobiling upon the *peristalsis of the bowel* is of great interest from both the obstetric and gynecological standpoint. Inquiry into the subject reveals a wide range of opinion.

Barbatis (*Journal d'hygiene*, 1907, xxxii, p. 11) studied this subject, and concluded that the results were due to the vibration of the motor car, and he gives in his paper a brief history of apparatus for securing vibration in ancient and modern times, as an aid in treatment of constipation.

He shows that the results of motoring upon constipation are most uncertain.

Inquiry among my patients points to the fact that at first the use of the motor car in a constipated subject secured a daily evacuation of the bowel. These cases were common.

But as the automobile was used more continuously the effect, like that of many laxatives, wore off, and the original constipation returned.

It can be shown, I believe, that chauffeurs, with originally normal action of the bowels, gradually become constipated, as if from the sedentary character of the occupation.

Broadly speaking, the continuous use of the motor car, is, in the long run, bad for the bowels; spasm of the intestines, ending in atony, results.

I have yet to see a case of *hemorrhoids* that was not aggravated by constant motoring.

This applies particularly to the hemorrhoids of pregnancy.

In this last condition even what I have termed moderate motoring will send the patient to her physician for relief, and excessive use of the car usually results in marked discomfort.

This fact has repeatedly been brought to my attention.

It is interesting to note in this connection that the use of the inflated rubber ring, commonly known as the Peter Cooper ring, often used by such patients to sit upon, does not appear to relieve the effect of the vibrations of the motor car.

Pelvic or abdominal congestion or inflammation in general usually suffer from excessive motoring.

I have in mind a moderate pyelitis of pregnancy in a patient who insisted upon excessive motoring in spite of warning and advice, and whose condition became serious.

My own mechanic suffered from chronic catarrhal appendicitis for over a year. During this time he was laid up for a week in a hospital for a mild attack, but refused operation.

After a rather rapid thirty-five mile run over a rough country road he was suddenly taken with an acute attack of his trouble, and I took him immediately to a hospital where he was operated upon.

Varying degrees of procidentia usually have the accompanying pelvic congestion aggravated by excessive and often by even moderate motoring.

Two such patients I have in mind. Both use the motor car freely, one touring for several weeks each year on the Continent of Europe. Both refused surgical aid. In each instance an inflated doughnut-shaped rubber pessary gives relief, and permits of motoring without distress.

When these pessaries collapse, they having neglected to report to the office at the stated intervals, motoring to any degree again becomes distressing.

What has been said of procidentia applies to *backward displacement of the uterus*.

Backward displacement accompanied with adhesion and pelvic congestion always suffers from motoring to any extent.

Many instances of backward displacement accompanied by *subinvolution* have come under my observation, as made distinctly worse by excessive motoring.

These cases occur in those patients who, despite warning,

insist upon getting about when involution is only partially complete, and refuse to report to their physician for examination at the end of the puerperium.

These are instances of retrodisplacement and subinvolution after labor at term in which the congestion-favoring influence of the motor car plays such a prominent part.

But there is another, and I believe a much larger class, and one which is constantly increasing, of those who suffer an abortion at the second or third month, who dispense with the services of a physician at the earliest possible moment, and return to motoring with involution hardly commenced.

We all know of instances in which the fact of the abortion has often been kept secret and no physician called in, for the reason alone that the patient will be ordered to bed, and that engagements and pleasures will be curtailed.

This is especially true of patients aborting during the summer time, while away from home and their regular medical attendant, and who yield to the ever-present temptation of excessive motoring.

Too weak or indolent for physical exercise, they yet readily undertake a several-hour motor run with its accompanying vibration, disturbances of circulation, and actual fatigue.

In my experience it is in these two classes of patients, after labor at term and abortions, that the baneful effects of the automobile are most plainly seen.

Each autumn brings one or more such patients to one's office, with large, subinvolted uteri, persistent leucorrhea, possible backward displacement and often beginning procidentia, menorrhagia or metrorrhagia, and the nervous phenomena which accompany such a clinical picture.

My belief is that the unfavorable influence of the automobile upon pregnancy has been somewhat exaggerated.

Undoubtedly the motor car is in many instances unfairly set down as a cause of a given abortion or miscarriage.

We must recollect that the last five years have seen great improvements in automobile construction, minimizing vibration, jars, and fatigue, and increasing safety. Witness the substitution of four and six cylinders for the older one- and two-cylinder cars; the larger wheel base and diameter of the wheels themselves; the heavier springs and the almost universal use of various types of shock absorbers.

Several amusing instances of the popular belief in the influence of automobiling upon pregnancy have come to my notice.

A physician became anxious because his wife in her first pregnancy apparently exceeded the forty weeks of gestation. Although the fetal head engaged in the pelvis he feared dystocia. This physician spent hours driving his wife about in his automobile, to the neglect of his practice and without the hoped-for labor setting in. Labor was subsequently induced.

Repeatedly patients in the early weeks of an undesirable pregnancy have turned to the automobile for relief. The roughest highways have been selected, and prolonged drives at fast speed resorted to without the desired result.

Interruption of pregnancy from the abuse of the automobile is commonly said to be more frequent in the early months. This statement I believe can be questioned.

My belief is that the middle third of pregnancy is more liable to be interrupted from this cause than any other time. Several cases under my observation that appeared to be undoubtedly due to the automobile took place at the fourth, sixth, sixth and a half, and eighth months, respectively.

Certain women appear to be especially susceptible to the abortifacient influence of the automobile, and certain conditions within the pelvis appear to me to favor this influence.

Patients have come under my observation who have had repeated miscarriages, which apparently were predisposed to, at least, by motoring.

There is one type in particular, I believe, especially prone to the unfavorable influence of the vibration and the circulatory changes induced by excessive motoring.

It is found in women with relaxed uterine supports not confined alone to multigravidæ, but frequently seen in primigravidæ, in whom even in the middle third of pregnancy there is a tendency to procidentia, and even after the uterus rises well out of the pelvis the presenting part hangs low. These are the cases in which, in primigravidæ and occasionally in multigravidæ, the head engages in the pelvis and descends well down toward the pelvic floor long in advance of the fortieth week.

Excessive motoring in these cases is liable to interrupt pregnancy.

CASE I is an example of this type of patient.

Mrs. A., of rather nervous disposition, although entirely fearless as regards the automobile, for the past eight years has

been accustomed to make frequent automobile trips into the outlying country about New York. Not infrequently these runs would include the distance between New York and Southampton, Long Island, eighty miles, or New Haven, seventy miles.

A run of sixty miles to a hundred miles in a day was of frequent occurrence.

During the eight years this patient suffered from three miscarriages, one at the third, one at the fifth, and one at sixth and a half months.

There was no uterine displacement or pelvic inflammation in this patient, all the miscarriages were *afebrile* in character, but her pelvic ligaments were extremely loose, permitting a partial *procidentia* in early pregnancy, although in the non-pregnant state, the uterus is held in good position.

That some cause other than the excessive use of the automobile might be found and corrected so that this patient might be carried to full term, Wassermann reactions were sought for in both husband and wife with negative results, and exhaustive examinations of the decidua and placenta were made by a pathologist, with equally negative results.

Both husband and wife were warned in this instance of the automobile being a causative factor in the miscarriage and it is my belief that it was.

On the contrary, other things being equal, a lower uterine segment held well up in the pelvis is less liable to be unfavorably affected.

So, too, in the last third of pregnancy while the head remains floating and there is no attempt at engagement in the inlet, the unfavorable influence is absent.

On the other hand, women without this relaxation of the pelvic supports, and otherwise with healthy pelvic organs, appear to motor safely during pregnancy, provided two conditions are complied with, namely:

First, that an average speed of not more than twenty miles an hour is used, and

Second, that in touring or on long runs, a stop for rest shall be made short of actual physical or mental fatigue.

CASE II is an example of the harmfulness of extensive motor-ing under the foregoing conditions in a healthy primigravida.

Mrs. B., in the twelfth week of her pregnancy, consulted me as to the risks of her taking the trip by automobile from New York to Bretton Woods in the White Mountains, at which latter place her family proposed to pass the summer. With the two conditions as to speed and fatigue, she was allowed the trip, although she looked upon the speed limit as a great hardship.

The patient stood the journey well, nursed her husband through a moderately severe typhoid while at the White Mountain resort, and in the late autumn, she being now in her seventh month of gestation, applied to me for permission to return by

automobile to New York. This I permitted her to do under the same conditions, but against the judgment of another physician, and she was subsequently confined at term.

With limitations regarding speed and fatigue, I even permit patients who have suffered from threatened abortion to subsequently use the automobile.

CASE III is an example of such an instance.

Mrs. C. IV, para, no miscarriages, experienced in June, 1910, at the third month of gestation, a threatened abortion, which at one time looked as if it would be inevitable.

Two years previously this patient had her right kidney anchored, and a ventral suspension performed for a retroversion.

After a three weeks' rest in bed the symptoms of threatened abortion subsided, and for some weeks following the patient was permitted to motor each day from her house to the sea-shore and return, a distance all told of less than two miles. The chauffeur was instructed that a speed of over twelve miles was not to be exceeded.

No return of the symptoms resulting, this patient finally in the autumn was permitted to use the motor car more freely, which she did, it being understood that twenty miles was to be the speed limit. This I have reason to suspect was exceeded. A normal labor occurred in January, 1911, with a perfectly healthy well-formed child the result.

In threatened miscarriage presumably caused by excessive motoring, my belief is that a low implantation of the placenta is an important factor.

CASE IV, seen by my associate Dr. H. C. Bailey, is an instance of repeated miscarriage in the same individual probably caused by motoring.

Mrs. D. in the sixth month of her pregnancy started on a motor trip from New York to Bayshore, Long Island. When between Freeport and Bayshore on the Merrick Road, she began to experience labor pains.

She was immediately taken to her home in Brooklyn where she miscarried at midnight.

Three years later, the same patient being then eight months pregnant, after a motor trip from Brooklyn to Coney Island and return, went into labor the same evening and was delivered of a six-pound living fetus.

If I may be permitted to overstep the bounds of this paper, I will refer to the anemic, amenorrheic, possible dysmenorrheic girl in her teens, with a low hemoglobin percentage, soft, flabby muscles, irritable heart, rebelling against physical exercise, and the marked improvement that the exhilaration, fresh air, constant mental diversion, better appetite, assimilation and blood condition, that automobiling produces. These girls have their general

health so improved as to be more amenable to the subsequent physical training required to restore their health.

The automobile has proved a positive blessing to many women of middle life, who have perhaps passed through a tempestuous menopause, have taken on weight to the extent to render locomotion and exercise difficult, or who are enfeebled, possibly by inoperative causes, cardiac disease, rheumatism, or gout.

These women and many others obtain endless enjoyment and recreation from short or long motor jaunts about the country that would be meaningless in the to-day slow-going horse-drawn vehicle.

To old maids, very old maids, with little of interest in life, the automobile has proved an untold mental and physical benefit, an endless source of pleasure, and has thrown open to them a new world and a new life.

Finally, credit must be given to the motor car as a life saver.

Although of the 373 deaths from street vehicle traffic in 1910, 104 were due to automobiles, still the speedier transportation of patients to hospitals by motor ambulances has undoubtedly saved many lives.

In private practice I can record one case of postpartum hemorrhage and several of eclampsia in which life was without doubt saved by prompt treatment rendered possible by the automobile.

28 W. FIFTY-SIXTH STREET.

A CONSIDERATION OF COMPLETE PROCIDENTIA IN THE NULLIPAROUS WOMAN WITH SPECIAL REFERENCE TO LACK OF PHYSICAL AND MENTAL DEVELOPMENT.*

BY

CHARLES OBER KEPLER, M. D.,

Boston, Mass.

(With two illustrations.)

As an introduction to this subject, the writer will present a case in point that came under his observation on December 19, 1907, in consultation with Dr. C. F. Berry of Boston.

M. E. W., single, twenty-two. Native of New Brunswick. Occupation, attendant.

Family History.—Patient's father died of probable tuberculosis. A sister died of tuberculosis of the lungs. Another sister, now twenty-seven, has never menstruated, is said to have no uterus, is also said to have some spinal trouble. The patient's

* Read before the Medical Society of the County of Albany, April 12, 1911.

aunt on her mother's side has six toes on each foot. Patient's mother is said to be hysterical, falling down. Patient's father and mother were cousins. Patient has a brother, thirty-two, who is weak-minded.

Previous History.—Patient had measles and whooping-cough in childhood. She has never been married. She fell downstairs when she was three years old. Patient nursed an aunt for about three years, who was very heavy and confined to her bed, she being compelled to lift her aunt from time to time. Menstruation began at thirteen. Duration, four to five days, regular. Patient cannot remember well, is easily confused.

Present Illness.—For the past three years patient has had a dropping out of the uterus. She has had leukorrhea for eight years, during which time she has had dragging and tired pains down the back. Her legs ache with her periods.

Physical Examination.—Patient poorly developed. Fairly nourished. Color good. Scraggly coarse hair on the chin. The lower jaw more prominent than the upper. Both rows of teeth irregular. Weight, about 100 pounds. Height, 5 feet 4 1/2 inches. Thoracic and abdominal cavities negative. Measurements of pelvis: The antero-superior spines, 9 1/2 inches; crests, 9 inches; antero-posterior diameter, 6 inches.

Vaginal Examination.—A complete procidentia with an enormously hypertrophied cervix, badly eroded and carrying down with it an eversion of the vagina and a portion of the base of the bladder, as also of the rectal wall. In the sac protruding could be distinctly felt the infantile retroflexed uterus, as also both ovaries. A greatly stretched but perfect hymen was present. The protruding mass from the tip of the cervix to its base at the labia minora measured 5 3/4 inches, with a circumference of 9 1/4 inches. Operation was done on January 20, 1908, previous to which for two weeks the patient was kept in bed with the mass replaced and the foot of the bed on 9-inch blocks. At the time of operation a moderate amount of the congestion had been relieved by this means, as will be easily seen by the accompanying photograph, which was made just before operation and while the patient was under an anesthetic.

Operation.—I first amputated the hypertrophied cervix, then having replaced the remainder of the mass, a reef was taken in the anterior vaginal wall and a high perineum built up. The abdomen was then opened just to the right of the median line and the uterus brought up. A ventrofixation was done, previous to which the writer, on account of the fact that the patient was mentally deficient, deliberately removed about an inch of each tube in its middle, effectually closing the ends—he feeling this to be his duty to society under the circumstances.

The patient made an uneventful recovery, and was last seen by the writer on December 28, 1910, two years after operation, at which time the results were evidently perfect as to cure.

Complete procidentia in the nulliparous, while a rare condition, is, I believe, not as rare as is generally supposed. I believe at no time has there been any consistent study of this class of cases. A search of the literature reveals seventy cases. The writer, realizing that if he were to add to this list it would be necessary for him to get in touch with surgeons all over the country, appealed to 155 representative men and met with a very generous response. Being of the opinion himself that there was some definite relation between this condition and defective mental conditions, he appealed also to 106 superintendents of as many hospitals for the feeble-minded and insane in the United States and Canada, from whom he also got an almost unanimous response, which enabled him to add in all eighty more positive cases to the list. Some writers whom I have not included in this list stated that they had seen from several to many cases each, but did not state any specific number, nor give me any of the details. The ages of the cases reported seems to indicate that this condition has a fair representation in youth, twenty-eight of my cases being under thirty years of age, and fourteen being fifty and above.

Operations.—From a perusal of the literature it seems that about all the classical operations have at one time or another been done in the attempt to relieve and cure these cases. There has been done amputation of the cervix, ventrofixation, ventro-suspension, anterior and posterior colporrhaphy, perineorrhaphy, supravaginal hysterectomy with ventrofixation of the stump, Wertheims' Umgeker, as well as the Alexander operation.

In bad cases of intestinal ptosis associated with complete procidentia in the nulliparous, any operation not first relieving this condition would be a failure, as has been pointed out by Freund. Enteropexy with complete obliteration of Douglas' pouch would be the only satisfactory operation for such a condition.

DEFINITION OF COMPLETE PROCIDENTIA.

The cervical elongations while favorable to prolapse are not to be considered as procidentias. A procidentia is a true hernia, a sacropubic hernia. Freund says of procidentia in the nulliparous, that infantile conditions of Douglas' pouch and slightly inclined pelvis are true causes of this anomaly, which always begins as a hernia of Douglas' Pouch. He says clinically and

anatomically there is a more or less strongly marked undeveloped condition of the pelvis and pelvic organs. The beginning of the deformity occurs in early youth, without in many cases an especial external cause. A remarkable thing which has been noted by Freund and many other observers has been the great tolerance of this condition by its possessors, as compared with the external disturbances of acquired prolapse. In my own case the patient's real condition was only discovered by accident, she being of the opinion that her condition was common to womankind and one that should be borne in silence. According to Freund, with every kind of increase of abdominal pressure, a portion of the intes-



FIG. 1.—Complete prolapse of uterus and vagina in a nulliparous woman.

tines press themselves down into Douglas' pouch, which continually bulges the pouch like a hernia until the same protrudes from the vulva. In producing this condition, in the beginning there is a sinking and prolapse of the posterior vaginal wall, with gradual pulling down of the uterus and bladder. There is in Freund's typical case a constant ptosis of the intestines, especially the small intestine and the iliac flexure, down into Douglas' Pouch.

There is in all these cases a practical impossibility in holding

up these prolapsed structures by mechanical means. A procidentia cannot be considered complete unless it is possible for the surgeon to put his fingers on the front and back parts of the protruding sac, and have them meet except for the walls of the sac, outside the labia minora; *i.e.*, the uterine body must lay entirely outside the labia and below the finger tips.

Procidentias in the nulliparous are essentially of two classes: First, those due to congenitally defective physical development. These cases usually occur at or near puberty, but may even be found in the new-born, and are said to be due to vicious innervation of the contractile walls of the pelvic viscera. This

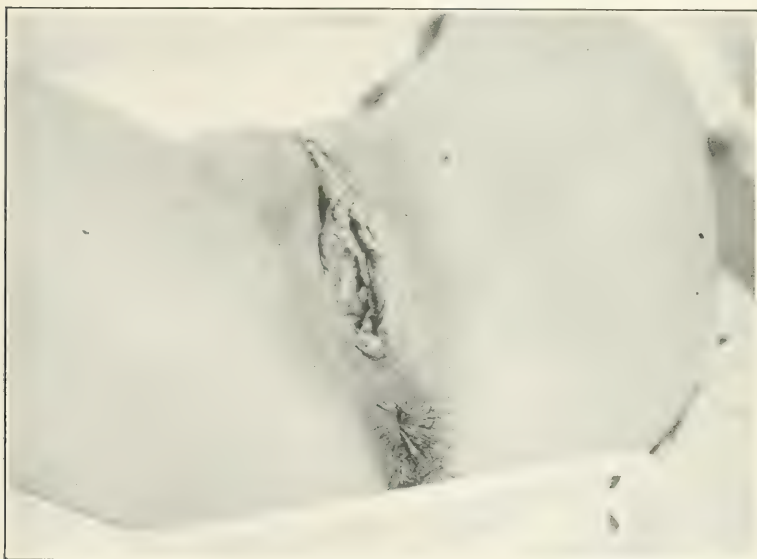


FIG. 2.—Condition after replacement, after amputation of cervix and just before operation of perineorrhaphy.

condition is extremely rare, only twelve cases having been reported in the literature. Second, those cases occurring later in life and not necessarily associated with congenitally defective physical development.

Of the first class, namely those cases due to congenitally defective physical development, a study of the predisposing causes shows them to be legion. It may be said at the outset that hereditary degeneracy or arrest of development is probably the underlying cause of all these cases. There may be a short

or shallow vagina or both; a lack of development of the perineum or its entire absence. There may be an infantile uterus or very thin vaginal walls, weak and poorly developed utero-sacral ligaments, a long cervix defectively implanted in the vagina, a flat or perpendicular pelvis associated with defective muscular tone. In this class of cases there are practically always developmental peculiarities and failures in development. In the very early procidentias, such as those occurring in the new-born and non-viable children, there is almost always noted such attendant abnormalities as spina-bifida, scoliosis and kyphosis. One case reported by Veit had a large head and face, also arms and legs with abnormal curves; a high arched palate has also been observed. Another case had a rectal prolapse. As concomitant symptoms, chlorosis and amenorrhea have been mentioned and mitral insufficiency has also been observed. In the class of cases occurring at or near puberty, there is apt to be congenital failure in the normal peritoneal bleedings, thin, weak and defective fascia or long and attenuated ligaments. Procidentia in this class of cases is always due to imperfect physical development. *Vineberg goes so far as to say that any abnormal configuration of the pelvis is a favoring cause of procidentia. The fact that procidentia occurs so frequently in the young argues strongly that it is due to congenitally defective physical development. As to the class of cases occurring later in life; There is first a prolapse of the anterior vaginal wall, just the opposite to the cases of the first class. The causes which have been noted in connection with these cases are evidently more numerous than in the first class which has been under consideration. There may occur an extraordinary amount of atrophic changes in the pelvic organs due to the cessation of the menstrual function. Another favoring factor is the disappearing of the fat from the pelvic tissues, and enteroptosis, general debility, congestion of the uterus and its appendages associated with increased weight of the same, hypertrophied cervix, tumors of the uterus. *Hirst mentions a pseudomyxoma peritonei, with 15 pounds remaining in the abdominal cavity, straining at stool and gymnastics, constipation. Reynier mentions violent fright, and a blow on the seat. Sudden violent exercise and leukorrhea have also been mentioned by my correspondents. *Noble gives as causes: First, a lack of tonicity in the supporting structures of the pelvic floor or in the ligaments of the uterus. Second,

*Personal communication.

increased pressure from above. Among the further acquired causes, may be mentioned exhaustion and anemia, spoken of by *Byford. Masturbation has been mentioned by several observers as causing this condition, by reason of the long continued hyperemia.

*B. H. Wells quotes the cases of four sisters, all of whom had complete procidentia, two after childbirth and two before any pregnancy. One patient mentioned by *Brettauer was compelled to stand all day during her periods. Strain in lifting, is spoken of by *Taylor. *Frederick mentions lack of fresh air, sunshine and exercise as contributing causes. Chronic cough has been mentioned by *Hundley. He also quotes a case caused by a fall from a swing, and another due to the weight of a tumor. *Mitchell cites a case following acute illness, with rapid emaciation. *C. M. Green cites a case caused by lifting half a piano. Hard work and also a poorly nourished condition is spoken of by *Shoemaker, although at this point it might be well to mention for contrast several cases spoken of by *G. M. Baldy as well nourished. Excessive physical activity has been spoken of by *W. S. Stone. A ball pessary by *Dickinson. Constant kneeling by nuns, a fall on the ice and excessive coitus are also given as causes. *B. C. Hirst cites a case in which prostitution had been carried on since the patient was eleven years of age. Prolapse of the rectum has been cited. *Polak and *Carstens both mention cases with gradual onset and no known trauma. In a large proportion of the cases that I have met with in the literature and that have been reported to me personally by many observers, certain physical defects of other parts besides the ones already mentioned, accompanied the condition of procidentia in the patients that have come under their observation. One writer speaks of a general visceral displacement. Another says that his patient had less than normal weight for her height. Another case showed an arrested and impaired development in her muscular and nervous system. Another had a retroversion and also a lowered tissue resistance. Another case reported by *Goffe had a "general lack of physical development." Another patient had a justo-major pelvis. Another reported by *Jarman had a shuffling gait, open mouth, relaxed muscular system. Still another one had an inguinal hernia. Another, ptosis of the right kidney, and another case was undersized, had a lack of muscular fiber, and also an inguinal hernia; while still

*Personal communication.

another case is reported as being small, much undersized and undeveloped and showed "marked degenerative stigmata." Defective physical development tends to a production of uterine descent the same as relaxation in other parts of the body. It might be well at this point to define what we mean by degeneracy, physical and mental. *Walton says that degeneracy really denotes a lowering in the scale with regard to moral qualities, but custom has applied this to mean deviations from the physical and mental normal. Among the constitutional defects mentioned by him, is hair on the face in the female, projecting lower jaw, peg-shaped teeth and a large variety of other stigmata varying from what he calls "deviation" to very marked abnormalities. Some of the physical defects occurring in the nulliparous women besides the aforesaid, are hernias of various kinds, spina-bifida, double vagina, a two-horned or atrophic uterus, umbilical hernia, club-foot and congenital amenorrhea; sometimes there are malformations around the anus. Exophthalmic goitre and epilepsy have been noted, also mucomembranous colitis and sclerocystic ovaries, cited by *Lepeyre. Physical and mental stigmata do not always, however, go hand in hand. There may be a preponderance of the physical, with very little of the mental, or, on the other hand, there may be an abundance of mental stigmata in a given case, with practically normal physical development.

Mental Defects Occurring in Connection with Complete Procidentia in the Nulliparous.—It is rather remarkable that out of the seventy cases the writer has been able to discover in the literature, while possibly a dozen operators have mentioned various mental defects, there has been no evident attempt on the part of anyone carefully to sift out the evidence with the idea of showing a vital relation between procidentia and mental as well as physical degeneracy.

Out of the writer's eighty cases, thirty-eight are spoken of as having all grades of mental defects. *Baldy speaks of several cases as very nervous. One so mentally unsettled as to need a nurse continually. *Lapthorn Smith characterizes one of his cases as mentally defective. *Vineberg says of his case, "decided lack of mentality." *Boldt, "less than ordinary intelligence." *Franklin Martin quotes several cases in which he speaks of "inferior mentality." *Norbury has a case with "gradual mental derangement." *Dorsett and *Perry both cite "de-

*Personal communication.

mented cases." *Murdock, a "feeble-minded" case, as is also a case by *Palmer Findlay, who speaks of two sisters both "feeble-minded," one of whom was also completely prolapsed. On the other hand, *Ashley, in mentioning a case of procidentia associated with cretinism, states that in his opinion one has no bearing on the other. Dementia precox, low and high grade imbecility, idiocy and chronic mania have been cited in connection with complete procidentia in the nulliparous by *Ashley, *Crumbacker, *O'Brien and *Smith. Hysterical insanity by *Norbury. Quite a number of observers in quoting their cases have made no mention of mental defects, while others have distinctly stated that there were none manifest. As if to prove the rule by its exceptions, *Bissel cites a case of a girl of sixteen, small stature, "good average mentality," while *Whitridge Williams reports a case, to use his own words, "an energetic hustling woman of marked intelligence, married, nulliparous and fifty-five years old." Thus from conditions of nervousness in a high degree and hysteria through various stages, including lack of mental ability, less than ordinary intelligence, secondary dementia, feeble-mindedness, imbecility, dementia precox, to cretinism and idiocy, we have found complete procidentia in the nulliparous an accompanying condition.

In the entire eighty-one cases of my collection, there was only one that was spoken of as "of marked intelligence." As insanity is largely an acquired disease and due to various forms of extraneous causes, the writer did not expect to find any relation whatever existing between acute insanity and procidentia in the nulliparous. So strong does *Dudley feel on the matter of interrelation of complete procidentia in the nulliparous with mental defects, that in a communication to the writer he says "I have never seen a case of complete descent in the nulliparous in a woman of superior mental and physical development." *Gordon says he expects patients with complete procidentia to be feeble physically and mentally. The writer's own case bears out this relation very fairly. We have in her case the loss of memory, the nervousness, the childish mind, the slowness to comprehend, the general lack of balance and inability to think out problems as would be expected of an adult or normal mind; this associated in her case with the protruding lower jaw, the hair on the chin, the small stature and low forehead.

*Price says that in his experience patients who lack mental

*Personal communication.

and physical development are greatly prone to procidentia. *Pritchard says that it goes with a flabby and generally weakened physical condition, dementia precox, low grade imbecility, idiocy and advanced dementia in the nulliparous. The writer cannot help but believe that when once attention has been called to the fact that in so high a number as thirty-nine cases out of eighty-one, an almost 50 per cent. showing, physical and mental stigmata have been shown as accompanying complete procidentia in the nulliparous, one must be led to believe that there is an intimate relation between physical and mental congenital stigmata and procidentia in the nulliparous. The writer also feels that when once attention has been called to this relation, many observers and operators in various parts of the world will pay closer attention to the signs of defective physical development and mental degeneration that their nulliparous patients may possess who present themselves with complete procidentia.

While the writer does not expect to prove beyond the peradventure of a doubt by the foregoing paper that there is a relation between complete procidentia in the nulliparous and congenital physical and mental stigmata, yet he feels that he has adduced sufficient evidence not only from the literature but also from the cases which his medical confrères have been kind enough to place at his disposal to cause a high probability of such an interrelation. If the writer has been fortunate enough to have excited sufficient interest in this subject so that other operators of wider experience may either prove the accuracy of his deductions or in the light of their greater experience disprove the same, his work will not have been in vain.

CONCLUSIONS.

First. We find that complete procidentia is more frequent in the nulliparous than has been formerly supposed, approximately seventy cases having been reported in a scattering way in the literature, and the writer having eighty certain cases that have been given him by correspondents, also one of his own and some uncertain ones without details that have been spoken of by others.

Second. It is usually acquired from congenital causes in infancy or youth, but may be acquired later without any discoverable congenital defects.

*Personal communication.

Third. It is a true hernia of the sacro-pubic variety, generally beginning in Douglas, pouch by intestinal descent from intra-abdominal pressure.

Fourth. It is usually associated with congenital physical stigmata or degenerations.

Fifth. It, in a large proportion of cases, is found to be associated with mental perversions ranging all the way from the mildest hysteria to complete imbecility and idiocy.

Sixth. It can be treated by any one of a half dozen or more operative procedures, depending upon the degree and nature of the prolapse and the judgment of the operator.

Permit me in closing to take this opportunity of thanking the several hundred surgeons and alienists whom I solicited for their kindly and generous response, a response that has made this paper possible.

362 COMMONWEALTH AVENUE.

CESAREAN SECTION FOR IMPOSSIBLE LABOR DUE TO A DERMOID CYST.*

BY

W. P. MANTON, M. D.,
Detroit.

(With one illustration.)

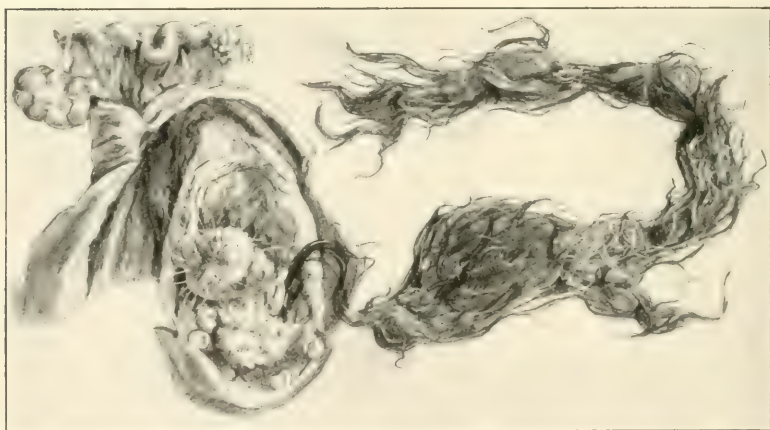
RESEARCH in embryology has shown 1. that, in the human species at least, for the development of the normal body the union of two elements, male and female, is absolutely essential, but 2. that distorted products—embryonal tissues and fetal structures—may arise independent of impregnation.

Neither the spermatozoon nor the ovum in their original forms are capable of propagating the individual; preliminary to this each, during the process of maturation, must undergo certain changes, which consist largely in the destruction of a part of their chromosomes. In effecting this the ovum throws off the polar globules and, becoming the female pronucleus, is ready for impregnation and the complicated phenomena which subsequently take place.

It is thus seen that each element, male and female, furnishes approximately one-half of the necessary material for the future

* Read before the Detroit Academy of Medicine, April 11, 1911.

development of the organism. Should, for any reason, a hitch in the processes incident to maturation occur and the polar globules fail to be eliminated to make room, supposedly, for the male element, then a method of reproduction known as parthenogenesis or self-fertilization might take place, the egg being at first, according to Minot's theory, hermaphroditic, that is, containing both male and female elements. Such a method of reproduction takes place normally among certain lower forms of animal life, as in the bees, some aphides (*Phylloxera*), varieties of crustaceans, etc., and has been artificially produced by Loeb in the eggs of the sea-urchin; but it is not known to have ever occurred in the higher orders.



From their observations of animals and man it is no wonder that the ancients, finding evidences of progeny inclosed in the sacs of certain tumors and abdominal swellings, should have concluded that these were "punishments inflicted by God upon those who had been guilty of moral errors" (McFarland).

As early as 1785 Blumenbach attempted to dispell this superstition, but it was not until the same neoplasms had been found in the bodies of female children of tender age, and Remak had shown, in 1854, that they were also developed in other parts of the anatomy besides the ovary, that the theory began to be abandoned. According to Barnes, Lebert was the first to apply the term "dermoid cyst" to these newgrowths, from the presence of skin and its derivatives in the tumor wall.

In attempting to place histologically and genetically this class of neoplasms, Waldeyer assumed that all ovarian epithelium was to be considered as undeveloped germinal cells or undeveloped ova, which led Ritchie, an English pathologist of the middle of the last century, to the belief that "every dermoid cyst of the ovary is really an ovum which has undergone a certain amount of development; that is, a perverted attempt at parthenogenesis." Pfannenstiel also accepts this parthenogenic theory,—claiming that there is only one portion of the female sexual gland capable of producing the picture,—the undifferentiated ovum of the primordial follicle.

Recent investigations, made possible by improved microscopical technic, have shown that the structure of portions of most ovarian dermoids is the product of the three primary layers, yet, up to the present no one has produced conclusive evidence as to their method of origin; none, neither the parthenogenic nor the fetal inclusion theories, offers entirely satisfactory explanation for the occurrence of these interesting and remarkable growths.

In passing, it may be mentioned that Sneguireff (*Ann. de gyn. et d'obst.*, May, 1905) advances the curious conceit that increased fecundity on the part of the mother may be responsible for the determining of embryomata in her offspring. Thus a dermoid developing in a gemellus may be looked upon as a third child, the possessor being in reality not a twin but a triplet—the third progeny, the dermoid, a reminiscence.

Interesting as the subject is, this is neither the time nor place to go further into details, and I therefore present the case which forms the text of this paper.

K. D., a healthy Irish girl, aged twenty-three, married eleven months and pregnant for the first time, was referred to me by her former employer. The menses had always been regular, and had last appeared December 21. Reckoning from this date labor would be due about the twenty-seventh of the following September.

The pregnancy had been normal. Labor pains set in at the end of the ninth month, but no progress being made, a physician was consulted. A pelvic tumor was discovered at this time and operation advised. On October 13, sixteen days after the onset of labor, the patient came under my observation.

"And she being with child cried, travailing in birth, and pained to be delivered."

Examination showed the child to be large, the head presenting in the L. O. A. position and resting on the left iliac wing. Fetal

movements were vigorous and the heart tones normal. The patient's external pelvis measurements were:

Inter cristal	27½ cm.
Inter spinal.....	25 cm.
Trochanteric	31 cm.
External conjugate.....	22 cm.

Per vaginam the cervix was short, rather hard and dilated for the finger tip only. Projecting downward to the middle of the tract and bulging the posterior wall so as to partially occlude the lumen of the tube was a tumor which largely filled the pelvic inlet and prevented the head of the child from engaging. The lower portion of the growth presented a hard, roughened surface, and had a bony feel, while higher up it was soft and doughy. The upper limits of the tumor could not be defined on account of the overlying uterus. The growth was fixed and could not be pushed upward, pressure at its lower pole causing considerable pain.

Diagnosis.—Missed labor from the presence of a dermoid cyst of the right ovary, adherent and fixed in the lower pelvis.

The patient was sent to the Womans Hospital and on October 17 Cesarean section was performed. As soon as the child, which weighed 8½ pounds, was delivered, the uterus contracted down and following the separation of the placenta could easily be drawn out through the abdominal opening, thus greatly facilitating the suturing of its layers. This also gave additional space for the investigation of the tumor. The hand was introduced behind the uterus and the neoplasm, which extended well down into the small pelvis, was gradually freed from its bed, the old and tough adhesions being separated with some difficulty. When withdrawn from the abdomen a fibrous band about six inches in length and the size of two knitting needles was seen to extend from just beyond the uterine attachment of the broad ligament on the left side to the upper inner side of the growth. This was tied off and severed. The pedicle of the tumor, short and thick, was ligated with cat-gut and afterwards mattress-sewed with kangaroo tendon. This latter was probably unnecessary but added to the security against bleeding from the large vessels developed in the pedicle and also served to cover over the stump.

The patient made a good recovery, nursed her child, and was dismissed from the hospital in normal health after a little over four weeks of residence. On the eight day following operation a mild phlebitis developed in the left leg, but the swelling was slight, and while there was some discomfort from pain and stiffness in the part, the condition did not seriously affect either pulse or temperature. During convalescence the temperature never went above 99.6°, and, except for temporary fluctuations usually due to slight gastric upsets, the pulse remained practically normal.

The cyst, which I here exhibit, was the size of a cocoanut,

weighed after removal $14\frac{1}{2}$ ounces, and consisted of a medium thick wall and contents. When opened it was found to be filled with semiliquid fat, a bone mass, resembling the upper maxilla in which were embedded five teeth of the bicuspid and molar varieties, and two papillæ sparsely covered with long reddish-brown hair. (The hair of the patient is very dark brown.) From the smaller, flatter of the two papillæ springs a switch of hair which, when cleaned of the fat, measures fourteen inches.

Epicrisis.—While ovarian dermoids are of frequent occurrence, representing according to Pfannenstiel 7.5 per cent. of all ovarian newgrowths, and their association with pregnancy is not uncommon, their presence as a hindrance to delivery is not frequent. In the literature of the past few years, which I have hastily scanned, but four reported cases, somewhat similar to the one just detailed, appear; doubtless further search will discover others, but the condition is one of such infrequency as to render it of interest and worthy of record.

In the case just related, we have, first of all, a missed labor due to the inability of the fetal head to enter the pelvis. At first the labor pains had been fairly strong, but in the course of time they diminished in severity and appeared at longer intervals, so that the patient was able to go about her work as usual. Cesarean section was clearly indicated by the presence of the tumor blocking the pelvis and rendering delivery impossible. Vaginal incision and evacuation of the fluid contents of the growth might have been attempted, but the dangers from subsequent traumatism and infection seemed to outweigh those possessed by the abdominouterine operation. The literature of ovarian dermoid cysts contains a number of instances where tapping the growth followed by abdominal section, subsequent to delivery, has proved fatal. Then, too, one must not lose sight of the increasingly large numbers of reported cases in which malignancy has developed in such a growth, and prior to operation cancerous degeneration of a dermoid must be exceedingly difficult to determine if this is at all possible.

The mild phlebitis which developed on the eighth day may have been caused by a procedure which I attempted at this operation for the first time. Instead of having an assistant grasp the uterus before incising, a finger-thick sterile rubber tube was thrown around the organ, drawn snug, half tied and fastened by a hemostat (Sanger's method). By this means, the operation was rendered practically bloodless, and the suturing of the uterine wall could be carried on with little inconvenience, from

the presence of blood. The discharge was almost wholly through the vagina, and while profuse, was not excessive.

About three months after returning to her home the patient found herself again pregnant, the last menstruation having occurred the latter part of February (18th). Labor would, therefore, be due about the 26th or 27th of November. The second pregnancy, like the first, was uneventful, but as cases which have undergone the Cesarean operation are always interesting, subsequent labors not infrequently presenting complications demanding immediate intervention, she was again sent to the Womans Hospital, which she entered November 28.

After an uncomfortable wait of ten days, during which time feeble, ineffectual labor pains recurred at irregular intervals, on the afternoon of December 7 I introduced a bougie into the uterus (Krause's method), and a Vorhees bag into the cervix, after a preliminary dilatation with Goodell's instrument. Uterine contractions were excited almost immediately, but these were apparently more painful than effectual and by the following afternoon had almost disappeared. At 3 P. M. of the eighth there was a sudden sharp gush of water from the vagina, followed by mucus and blood. The bag and bougie were now withdrawn and dilatation found to be progressing satisfactorily. At 8 A. M. of the ninth the membranes ruptured spontaneously, the pains became stronger, and at half past two o'clock the House Physician delivered a living male infant weighing seven and a quarter pounds.

Puerpery continued without untoward development, being normal save for an irritability of the stomach which, even before labor, gave the patient considerable annoyance. During the whole lying-in period the temperature did not rise higher than 99°, but the pulse rate fluctuated markedly between 76 and 100, scarcely ever being twice alike. There were no cardiac or kidney complications. The patient sat up on the twelfth day and was discharged with her child two days later. I understand that she has since been delivered of another infant, but of this labor I have no information.

Comment.—During pregnancy and labor the abdominal scar from the former operation appeared to be entirely unaffected by the severe stretching to which it was subjected, and there was no indication that the uterine wall was in any way weakened. Whether the previous section had anything to do with the tardy onset of pains in the second labor must be problematical. Fol-

lowing the assistance offered by bougie and bag the pains became vigorous, and the labor thereafter progressed normally, indicating that only a slight jog to nature appeared to be necessary to wake her from her sleep. All in all, the second delivery was much harder on the patient than the first, and she voiced the usual opinion of such cases in preferring the abdominal delivery rather than that *per vias naturales*.

32 ADAMS AVENUE, WEST.

TOLERATION OF THE CORSET: PRESCRIBING WHERE ONE CANNOT PROSCRIBE.*

BY

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Episcopal Hospital, Brooklyn, New York.

(With illustrations.)

TOWARD the question of waist constriction one of three attitudes may be taken. First, hostility, intolerance. Second, helplessness, surrender to inevitable fashion, cynical indifference. Third, an opportunism that does the best it can, insistently remonstrant in harmful cases, wasting no time on neutral cases, and taking one's small part in the slow campaign of education looking toward developed habits of exercise, appreciation of normal body forms, and true taste in dress.

In actual practice the matter goes largely by default. We give vague warnings or prohibitions that are temporary and futile. Merely to order a corset "loosened" when it may be of vicious design, is like telling a chronic colitic no more than to be careful of his diet. As the woman with a toppling uterus cannot go wrapper-clad the gynecologist has to see that she is provided with some definite dress adjustment. Whether this turns out to be help or only lessened hurt, it is manifestly our duty to select, direct, or control these means. Surgery is often the easiest portion of our service. A study of details and individual adaptation in these matters wherein our efforts are met with smile or sneer or subterfuge we naturally shirk.

The fillip to our sagging or cynical spirits was given by what might be called the one recent piece of dispassionate and scientific writing on the subject, a combined study by gynecologist and orthopedist, by Reynolds and Lovett of Boston. Confining themselves to backache and posture problems, each put his

* Read in Abstract before the New York Obstetrical Society, November, 1910.

failures to cure squarely up to the other, and, working together, they recorded many successes. I have been stimulated to resume old studies, and to publish the following observations (which are partly, also, the result of association with an orthopedist) even though conclusions based on a small amount of material must be necessarily incomplete and tentative.

SUMMARY.

Corsets may be classed as corrective, neutral and harmful.

The average corset still shows constriction at the waist line of the form if not of the degree of the hour-glass design.

My observation contradicts the claim that low abdominal girdling and "lifting" have taken the place of waist-line pressure. Tests show that in two-thirds of the cases there was greater pressure at the waist than lower on the abdomen, one-third being equal. In thin women neutral conditions were general. Pressures on the lower ribs still ran high. In one-half the cases all pressures ran high. The spring or gap of the corset when unhooked gives an excellent practical measure of the amount of pressure exerted, two and a half inches being the most that should be tolerated. Comparison of the girth over the corset with that measured around the undershirt is worthless as an index of constriction. Interior tests showed little effect on increase in vaginal pressures in corseted women whose abdominal walls and pelvic floor were firm, but they indicate a marked rise in intrapelvic pressure from exertion in corseted women whose muscles are flabby and interior supports relaxed. The tight corset harms vigorous women little, weaker women greatly.

Among postures one-half were found defective, one-third good. Alteration in or change of the corset often brought about marked improvement in attitude. A simple test consists in standing a patient with heels against a mark on the floor, and her side to the wall and noting the location of the scapula and buttock with and without the corset and any change for the better or worse in the center of gravity and in uprightness. Certain types of body form are particularly susceptible to defective corseting, such as the individual with the long and slender trunk.

Types Affected by Corsets.—The muscular and active woman, with abdominal walls of good tone, and pelvic floor firm and uninjured, with internal organs normally anchored and no great fat padding—this type is little harmed by corsets.

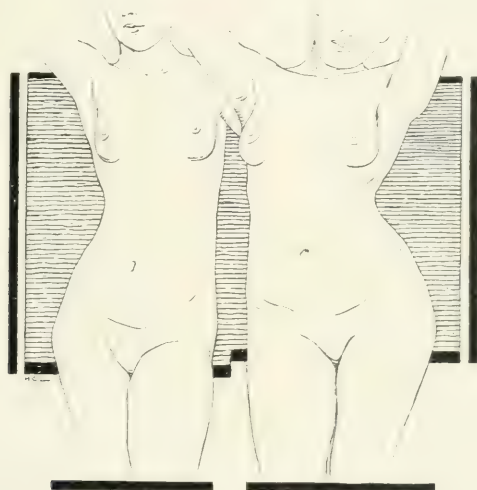
The relaxed woman, long bodied, her lower chest easily com-

pressed, her internal organs lacking fat cushions that are adequate and supports that are resilient (whether from defect in development or overstretch of pregnancy) this type is commonly harmed by corsets.

These types are contrasted in several figures here shown.

Let us discriminate. It is of use to make groups as follows:

1. A small class of women who suffer no apparent permanent injury even by excesses in pressure and constriction.



FIGS. 1, 2.—Body forms that are factors in questions of corset postures and pressures.

A thin build shows a long trunk seriously affected by constriction during adolescence.

A square build and broad trunk may be squeezed to develop fat pad deformities, but rarely into displacements or serious defects.

2. A large class where moderate degrees of constriction are tolerated with hardly appreciable harm.

3. A large class of women somewhat below par in whom abdominal constrictions slowly induce considerable alterations, sometimes permanent.

4. A small class wherein even slight departures from normal conditions cause serious disturbances.

APPARATUS AND PRESSURE OBSERVATIONS.

In studying corset pressures I have used a mercury manometer. The methods heretofore in use by Schatz, Hormann, Moritz,

and others as well as those employed in my experiments of 1885-1887, in measuring intraabdominal pressures, are not conveniently adapted to our work. While the water column connected to a water manometer gives to the eye finer vacillations than the



FIG. 2.



FIG. 3.

FIGS. 2, 3.—The long trunk type lays open to pressure a far longer area than the square trunk.

slow moving mercury can, it calls for a care in adjusting the level of the spot where the measure is taken to the level of the top of the fluid in the manometer that disbars it for readily multiplying records.

The mercury manometer, or the aneroid, influenced by an air column acting through a tube running to an air-filled bag, is subject to some minor inaccuracies, as from compressibility of the air. These may be disregarded, I imagine, as at 75 cm the



FIG. 4.



FIG. 5.

FIG. 4.—The crushed ribs of the long-bodied type after corseting.
FIG. 5.—The congenitally defective type that tolerates pressure badly.

air is compressed $1/20$, at 150 cm., $1/10$,—and most of our quiescent readings are below 75 cm. A record that can be made in a few minutes in an office will permit of comparison of essential differences and is clinically convenient. The woman who

avers that her corset is not tight is confronted by the flight of the needle of an aneroid. The pressures that cause prolapse or affect the post-partum uterus can be demonstrated either on the skin surface or in the vagina or rectum.

Description.—On the wall, at any convenient height for reading its face, hangs a mercury manometer like any of the sphygmomanometers. The most convenient is the aneroid of Short-

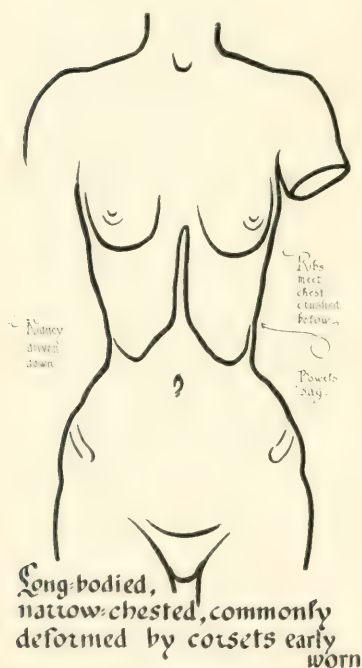


FIG. 6.



FIG. 7.

FIGS. 6, 7.—Tracings of the actual results in the two types: in the long trunk where corsets are early worn, this costal angle is permanently gone; in the other developed well. Severe though the pressure be, and ugly though the fat pads may bunch, the wide rib angle remains and the bowels hold their places.

Mason, the "Tyco" sold by Meyrowitz of Twenty-third Street, New York, which is about the size of a watch. A short piece of tubing connects below, with a T, one arm of which leads to a bulb, the other by tubing to a bag. The bag, which goes under the corset measures 5x5 cm. The 1 1/2 meter tubing must be of rubber that is inelastic or approximately so. All the joints

must be wired or else back-leak occurs. The bulb is compressed to fill the bag, then the air allowed to leak out till the bag is about 1 cm. thick, and the manometer face is rotated till the needle stands at 0.

The amount of tension in the bag or the size of the bag are indifferent matters, not affecting the record. The bag is placed under the corset at various places and the readings taken, first

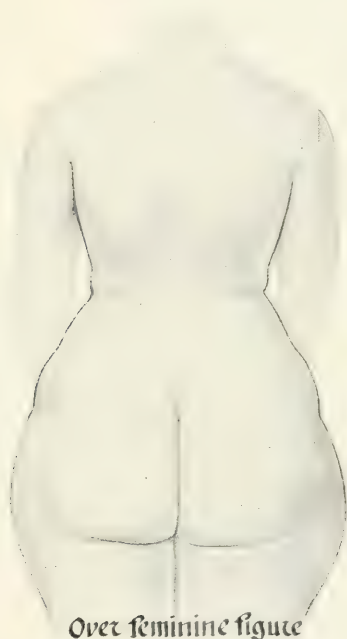


FIG. 8.—Over feminine figure.

at the end of quiet expiration, then at the end of full inspiration (Fig. 31).

For observations in the vagina the thin smallest size elastic rubber ice bag is made to ride upon and above a two-inch spiral spring, soft rubber, circle pessary to which it is cemented in such a way that its lower end makes a resisting diaphragm across the opening of the ring. With patients having widely torn and gaping pelvic floors, as in old prolapses, this bag is cemented above an air-filled cushion pessary. The bag is gently distended when in place and the dial rotated to bring the needle to zero,

and then readings are recorded. For rectal use the bag is fastened to a rectal tube. For convenience I begin with the vaginal pressures of the recumbent woman in her corset; then let her sit on the edge of a chair, bending her body forward as in writing;



FIG. 9.

FIG. 9.—The male type with vigorous muscles that gets little harm from high pressures. Esquiline Aphrodite "diudumena."



FIG. 9a.

FIG. 9a.—Outline of actress; to be compared with outline of Fig. 9. Women need to have this contrast urgently and frequently presented.

next, I take standing records, and lastly, the pressures under the corset. The respiratory vacillations are to be observed before

records are made as a sign that the bag and tubing are freely communicating.

Intrapelvic Pressures.—It has been established that the average pressure at any spot in the pelvis (or abdomen) is represented by a column of water standing on the level of such spot,



FIG. 10.

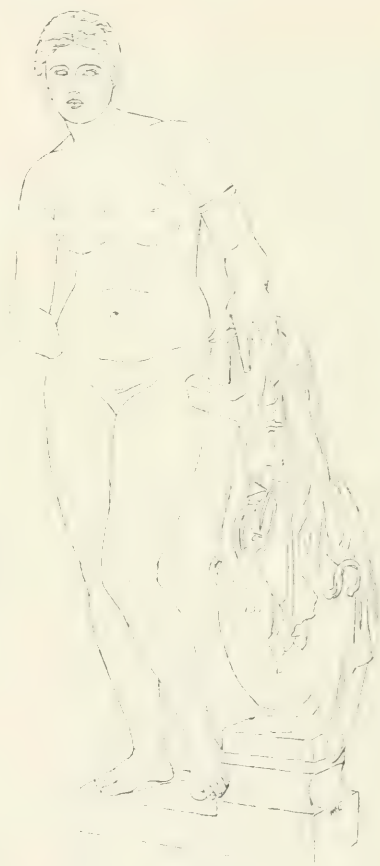


FIG. 10a.

FIGS. 10.—Corset deformities A. Trunk atrophy. Falguières statue made from Claude de Merode compared with the Venus of the Vatican, FIG. 10a.

whose height is the distance to the top of the abdominal cavity. For instance, in the rectum the pressure is 40 cm. of water in the standing position. This is the distance to the vault of the diaphragm. Lying down the pressure is 10 cm. of water or the distance to the anterior abdominal wall. The difference in

specific gravity between mercury and water is 13.6. Thus, lying down with clothing loose, the equivalent in the rectum with the mercury manometer would be about 8 millimeters, when our subtraction for bag tension has been made, and in the standing posture 30 mm. Hg., corrected. Lying down, the vaginal pressures run higher than this in muscular women.



FIG. 11.



FIG. 12.

FIGS. 11, 12.—Corset deformities A. Trunk atrophy of the model transferred literally and constantly to art, as in Lejeune's *Eve*.

These studies, extending over several years, were made in office practice among women for the most part in comfortable circumstances. They covered somewhat less than a hundred individuals, traced in outline, tested for pressures, measured

and fully noted, but less complete records were made of a very much larger number, and these also have been collated. Among shop girls the findings would be less favorable. These figures of mine refute the contention of O'Followell that the modern corset is an "abdominal" corset, lifting the lower abdomen rather than driving it downward, as in the old hour-glass shape. I expected to confirm his view in making these records. But we found that in over two-thirds the pressure was greater in the umbilical region than below it; which means that definite downward pressure was exerted. In this regard one-sixth were

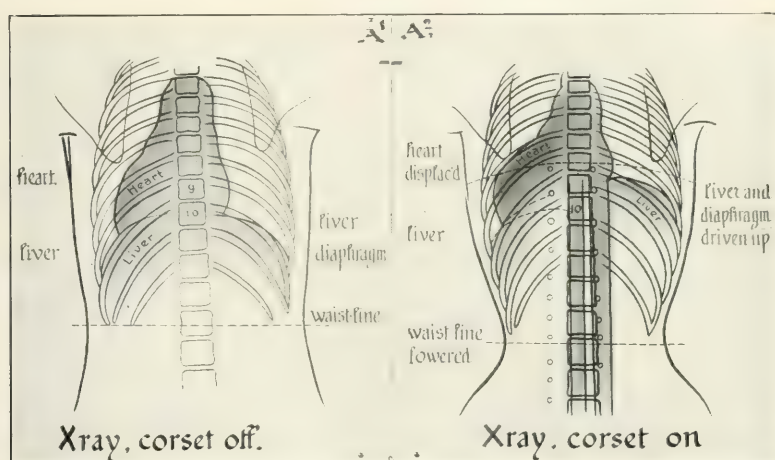


FIG. 13.

FIG. 14.

FIGS. 13, 14.—Corset deformities B. Lower chest crushing. (Kraus.)
See also Figs. 4 and 6.

neutral, showing equal pressure at the level of the navel and above the pubes. Only one-fifteenth, and these for the most part costly, made-to-order corsets, showed conditions other than waist constriction, or with the lower zones showing the higher pressures. One-third of the patients showed a relatively low pressure throughout—nearly all of these being thin women. The spring of the corset in loosening the steels was three inches and over in about one-third of the cases.

The frequency of occurrence of high rib pressures was somewhat unexpected, as the modern corset claims to give fair play to costal respiration. The high umbilical pressures show that the tendency of the old hour-glass corset to force the suprapubic

region outward and forward has not been done away with in the average present day corsets as they run; though there is encouragement in a few cases with lifting possibilities and the vicious shapes are less common than formerly. But it will be seen that in my lists there are more harmful than tolerable stays, more defective than neutral forms.

The average pressures are:

<i>Quiescent:</i>		<i>Deep Inspiration:</i>	
Ribs,	42	Ribs,	89
Epigastrium,	25	Epigastrium,	50
Umbilicus,	44	Umbilicus,	71
Hypogastrium,	31	Hypogastrium,	47
Ilium,	47	Ilium,	61

AVERAGE PRESSURES.

<i>Quiescent.</i>		<i>Deep Inspiration.</i>	
Ribs	42	Ribs	89
Highest.....	80	Highest.....	200
Lowest.....	10	Lowest.....	40
Epigastrium	25	Epigastrium	50
Highest.....	75	Highest.....	120
Lowest.....	10	Lowest.....	12
Umbilicus	44	Umbilicus	71
Highest.....	90	Highest.....	120
Lowest.....	10	Lowest.....	30
Hypogastrium	31	Hypogastrium	47
Highest.....	70	Highest.....	100
Lowest.....	7	Lowest.....	12
Ilium	47	Ilium	61
Highest.....	150	Highest.....	210
Lowest.....	10	Lowest.....	12

Comparison of waist measure with and without the corset gives no clue to the amount of pressure exerted, and is no criterion of tightness or looseness. The gap between the steels on loosening the corsets gives a simple and practical measure of the amount of pressure exerted. If the patient cannot unhook without unlacing the tension is excessive. If, after unhooking and taking two or three deep breaths, and then drawing the corset into appo-

sition with the waist line with no trick of breath-holding, the gap is 10 cm. (4 inches) the pressure has been very high, 65 mm. and over. Five to 7 cm. (2 1/2 to 3 inches) is the most that should be tolerated and this means up to 50 mm. Hg. of pressure. It is only in an occasional flabby abdomen that pressure has been low with a wide gaping opening, but in such instances the mobile abdominal contents have been subjected to a considerable range of displacement upward or downward, so that the rule is not vitiated that reads "the wider the gap the greater the tension."

Coughing and straining efforts with and without a corset show

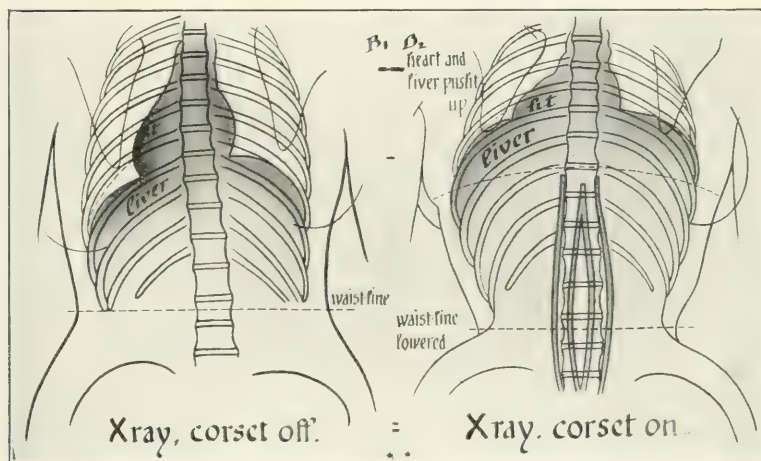


FIG. 15.

FIG. 16.

FIGS. 15, 16.—Corset deformities C. Displacement of organs. Heart lifted and rotated, liver raised (Kraus).

no very different maxima in strong-walled abdomens. Strain is strain on pelvic structure when there is counter-pressure, whether that counter-pressure be muscle or corset bone. But in flabby-walled abdomens the pressure in the pelvis (vagina) of the corseted woman is considerably increased under strains (as compared with the uncorseted individual) because the corset gives a point of counter-pressure. Curiously, too, when abdominal walls are firm, either by reason of strong muscle or dense adipose, the intra-pelvic pressures seem increased nearly equally as between a fairly loose and very tight corset. In other words, in normal individuals the pressure from above meets opposition and accommodation

and a balance is established. The corset can harm strong women little, weak women much.

Whether intra-pelvic pressure can be lowered by any so-called lifting action applied to the lower abdomen seems to me doubtful, and no such condition has been found in these tests. A better corset substituted for a vicious one, with bettered posture, lessens intra-pelvic pressure.

The chart shows manometer readings of corset pressures of twenty consecutive cases taken at random. If the red line

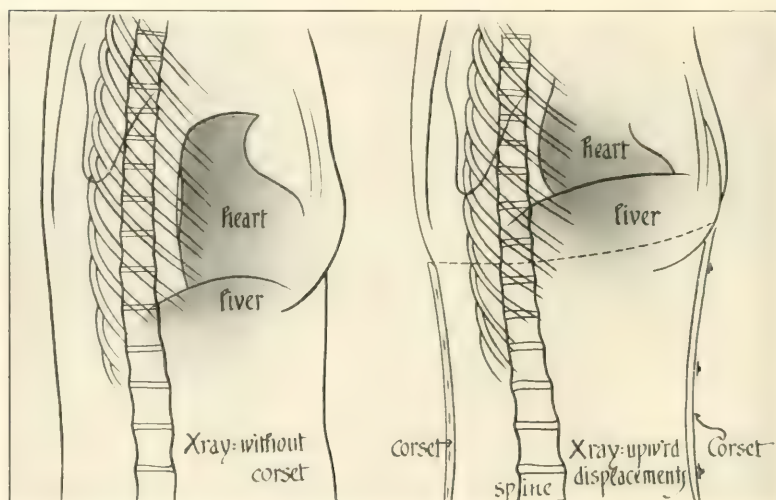


FIG. 17.

FIG. 18.

FIGS. 17, 18.—Side view of upward displacement of heart and liver. (Kraus.)

represents a correct grading of pressure, that is, low in the costal region and epigastric, the umbilical less than the suprapubic, and only of really high degree between ilium and trochanter, it is obvious how far the black lines vary from this standard of a permissible corset. In more than half the cases the ribs are squeezed in and held fast. The epigastric group of observations represents a satisfactory low plane of pressure, with one vicious exception. As an example of what these figures mean let me say that men of moderate girth wearing suspenders sustain, between meals, an average pressure, on the trouser band, of 20 mm. A summer belt runs from 25 to 30 mm. With a belt at 40, strong

straining to deliver a constipated stool, brings belt pressure to 260 or 280 for a moment. See Fig. 34.

Posture.—In the normal profile a perpendicular against which the buttocks touch is about an inch to the rear of the shoulder blades, and the furthest sweep of the incurve of the back is about 000 inches distant from that upright. The outlines showed wide variations in attitude. Most women stood well, and carried their shoulders high. Very many exaggerations of the forward

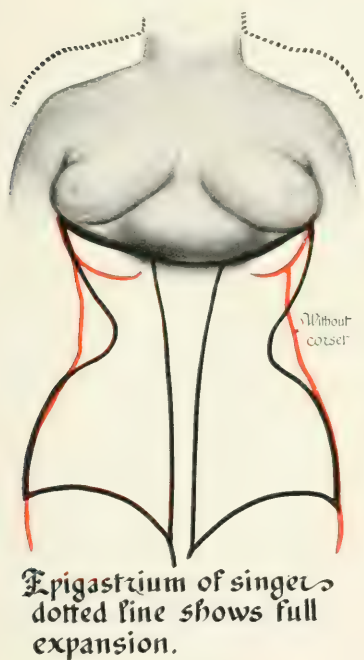


FIG. 19.



FIG. 20.

FIGS. 19, 20.—Corset deformities D. Epigastric distention. The triple breasted woman.

positions of the shoulders were found, two and a half to three inches being not infrequent in patients dressed in their undershirts. The opposite extreme was occasionally seen where the scapulæ hung posterior to the perpendicular. Dorsal curves ran very fairly even, and the flat backs were mostly due to fat padding. The observations varied a little whether the tracing was taken at once on removing the corset or some ten or fifteen minutes later, but the difference is not such as to call for watching in any but the

weak backed or over-feminine figures. Dr Reynolds has laid emphasis on the two common deformities for which we must watch, namely, the round-shouldered posture, and this over-feminine figure, with large hips, hollow back, small waist, prominent bust and overextended knees (Fig. 8). To this we add the

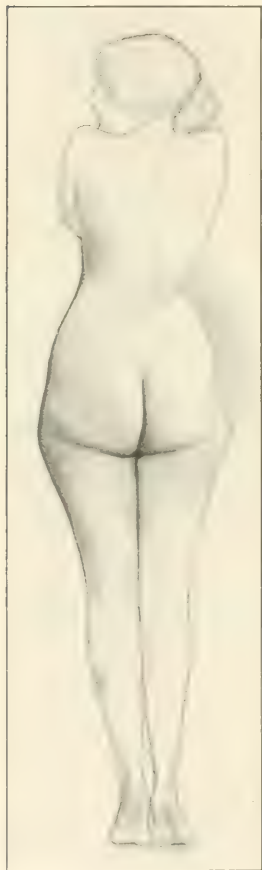


FIG. 21.



FIG. 22.

lopsided posture on which Dr. Eliza Mosher has laid emphasis, where lateral curvature is caused by the foot being held, in the relaxed standing posture, sidewise from the body instead of forward.

Like Dr. Reynolds, I have had the advantage of intimate association with an orthopedist. Without Dr. Truslow's study of spinal and muscular conditions, and his exercise cures, I

should have missed many a diagnosis and failed to strengthen many a defective body. In simpler cases I specify the exercises and give out slips of printed directions or typewritten sheets suitably checked. In order to be sure that the training is carried



FIG. 23.

FIGS. 21, 22, 23.—Corset deformities E. The fat pads that environ the genitals and emphasize them: over trochanters, over iliac crests, on buttocks. These two women would look at first glance not ill made were there no goddess for comparison. Note the trunk atrophy as compared with the Venus de Medici.

out the patient is directed to get a small diary and bring it at each visit to exhibit the entries, just as some sluggish gravid woman of the late months must show her pedometer at specified intervals.

Because exercises grow deadly dull, I have had a certain success with the medicine ball to develop trunk muscles. Resolution lasts longer when brother or husband takes an interest. When \$3.50 is deemed too much outlay, a good substitute is found in a bag in which four pounds of oats is sewed.



FIG. 24.



FIG. 25.

FIG. 25.—Fat pad deformities; below the navel and on buttock; only by comparison with the Venus de Milo are the defects of the model to be clearly noted.

It has been interesting to note how stable attitudes are, as shown in observations taken at varying intervals, whether such attitudes are good or the reverse (Fig. 42). One occasionally finds a "weak back" that sways and that cannot be steadied until a course of muscular exercise has been taken (Fig. 41.).

It would appear that while the normal posture may call for a line from the back of the buttocks to the back of the shoulders with the shoulders not more than an inch in front of the perpendicular, yet a few women are found whose scapular line is three inches anterior to the curve of the nates and who show neither ache, nor rigidity of back muscles nor of gastrocnemius. Add to this attitude, however, the "weak back" or the "feminine type" of Reynolds, which is big-hipped and thin-bodied, and backache is general. These forward swings, it seems to me, do not impera-

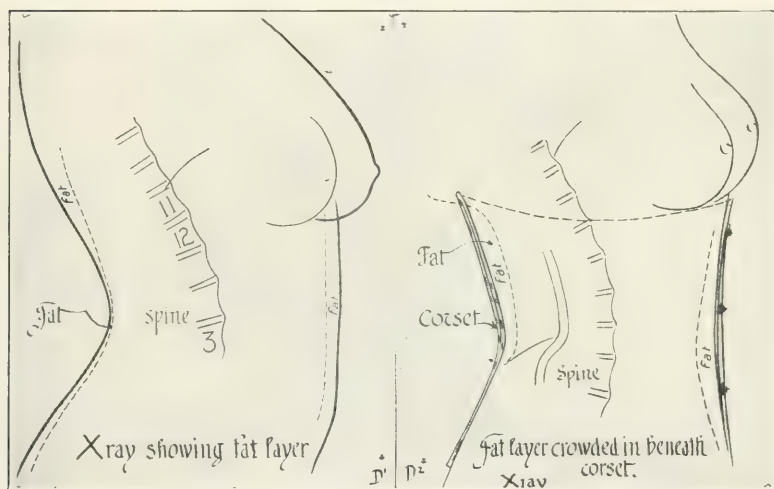


FIG. 26.

FIG. 27.

FIGS. 26, 27.—Compression of fat by corsets (Kraus).

tively demand adjustment toward the perpendicular provided the shoulders and chin are well held up, and no pain or spasm is present. Here one treads warily, however, since it is outside of one's province.

Unlike Dr. Reynolds, I call no corset good. For the purpose of altering an attitude a well devised appliance may be "good," but no body prison for healthy persons can be called beneficent, any more than that other restriction of our civilization, city life, can be called wholesome. Corrective, yes. Neutral, relatively harmless, well tolerated, yes. But not "good." I would class corsets as corrective—such as the therapeutic corset of Reynolds—as neutral, and as harmful, and vicious. I would forbid them to a few,

limit the hours of full dress corsets to most, and loosen the laces of every one.

It was determined by this study that a large number of corsets conformed to the structural lines favored by Reynolds. Some we saw built on bad lines, but worn loosely, or perhaps, if tight, only on the briefer dress parades. Here it was usually found to be unwise to interfere, for experience showed that change

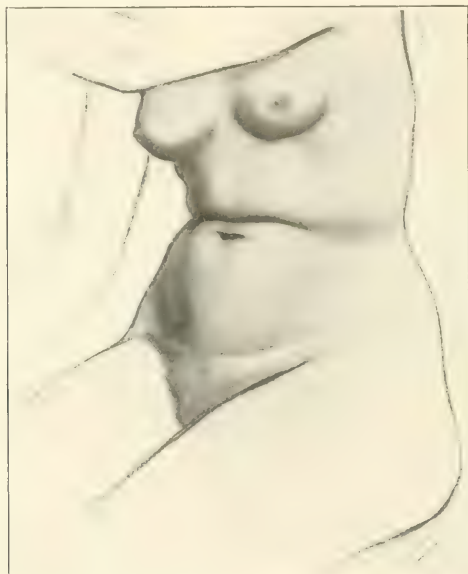


FIG. 28.—Corset deformity F. The waist-line crease, often resulting from occupation, sitting, stooping, and may as well result from waistbands alone, as in Fig. 27,—or from flimsy stays with broken bones.

brought discomfort without betterment. Only where displacement was aggravated or perhaps caused by such a corset, or posture was influenced unfavorably was stress laid on a new outfit.

SUMMARY OF ORDINARY OFFICE TESTS, AND DIRECTIONS TO PATIENTS.

Posture.—The patient stands on a mark on the floor, sideways to a paper on the wall, and shoulder-blade and buttock are indicated on the paper. The difference in these two points, with the corset and without, shows in a moment whether the corset affects the posture favorably or unfavorably and correction is required.

Pressure.—The hand passed within the corset, together with a note of the distance between the steels as they spring open, give the location of pressure—whether down-thrusting or lifting—and its degree.

An eye estimate of posture, of conformation or deformity, and palpation of muscle atrophies and spasm, come next.

Prescription.—Finally, directions are given, if requisite, such as alteration of the present corset; the need of a new one, ready-

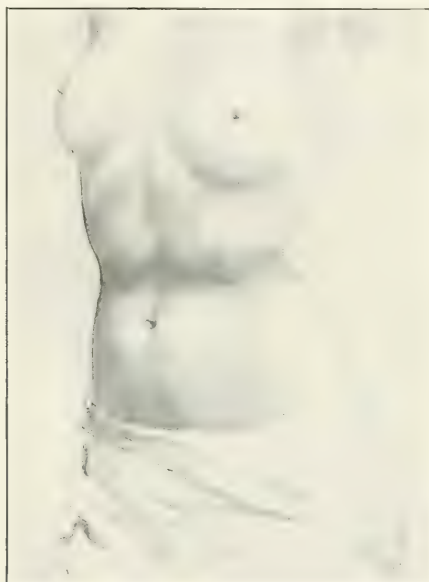


FIG. 29.

made or to order; and for muscular training. The altered or new corset is to be submitted for approval before wearing.

The Steps.—In their order, will be:

1. With corset, observations on posture, visual and by marks; palpation of pressure under corset.
2. With corset loosened, note of separation of steels.
3. With corset off, observations on posture, visual and by marks, and note of deformities and muscular spasm.

One's observation once well trained, records on paper are not needed.

The Questions are:

1. Does this corset throw the shoulders forward and the hips backward?
2. Does it produce excessive pressures, and is the waist-line pressure greater than that lower on the abdomen?

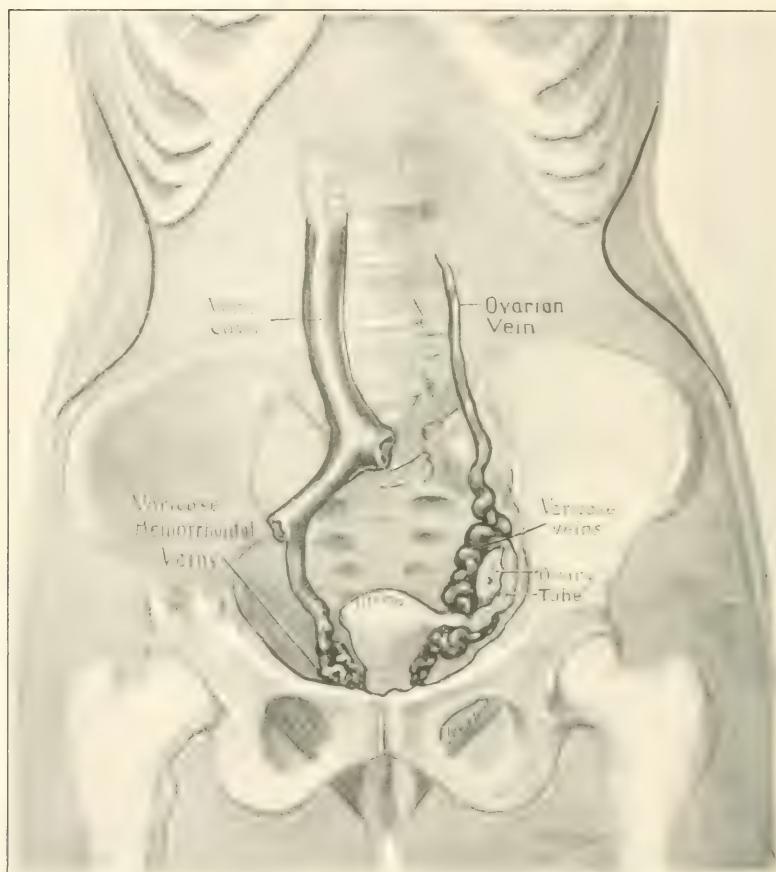


FIG. 30.—The veins about ovary and anus are at the lower ends of blood columns without valves, subjected to constriction at the upper or delivery ends by corsets; hence, hemorrhoids and aching broad ligaments.

3. Are the conditions such that altered corset conditions will help to relieve the disability?
4. Is there present a type of body, of abdominal support, of pelvic displacement, to be much affected by pressure or

In the ordinary routine observation of the corset of a patient suffering from pelvic or abdominal disorder, the time required is five minutes, and the outlay a few cents. Two clips to hold a

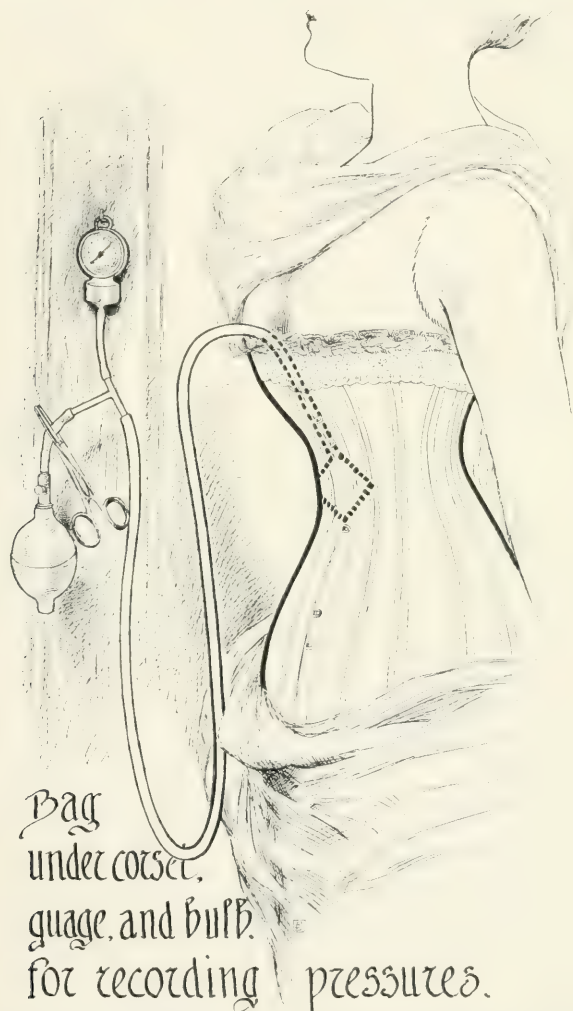


FIG. 31.—Pressure measurements. An aneroid (sphygmomanometer) hanging on the wall, is connected by tubing with a bag that is slipped under the corset.

sheet of wrapping paper against a wall, and a mark on the floor, suffice. Manila paper in rolls runs 2 feet wide. To a moderately smooth blank surface of wall, fairly lighted, at about 5 feet 4 inches from the floor, the clips are fastened. Any small clip

will do that has a firm grip and a hole in the handle to hang it, such as the Tiger. Their outside edges may be 2 feet apart, so that, if observations on the same patient are made, at intervals, the rehung sheet will register. The floor mark to locate the heels is a line projecting at right angles to an imaginary perpendicular dropped down the paper about 8 inches from its best lighted edge, to which the patient's back is turned. Against this mark, the doctor places his foot, or a book, or pivots a cleat 15 inches long. As a square to register the outline, one may

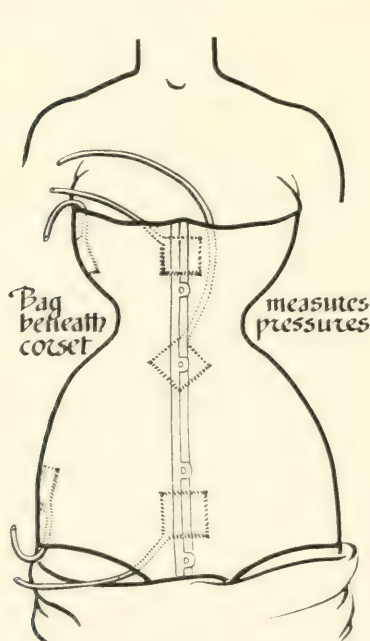


FIG. 32.

FIG. 32.—Positions in which the readings were taken.

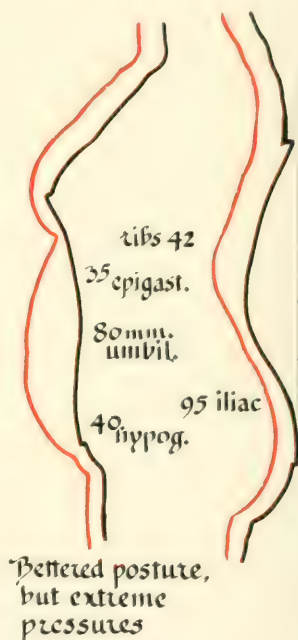


FIG. 33.

FIG. 33.—Example of extreme pressures, limiting play of ribs, girdling most tightly at navel level, less above the pubes.

use a thin 10 inch book, in the same way that one takes a child's height against a door. The patient undresses to her corset. The inner skirt, or a sheet, is dropped to the top of the pubic bone in front and the lower edge of the buttock behind, and held snugly by an elastic band bearing a garter catch. Sidewise to the paper, her heels together at the mark and her toes apart, she stands with the elbow just clearing the wall. The book, held level, bottom edge on wall, long side to the back of the

patient's shoulder, gives the point for marking the out-curve of the upper back, and it is then moved down to enter on the paper the most prominent part of the buttock.

The note of pressures is next made, in the manner shown further on.

The patient steps away and slips off her corset, again squares herself to the wall, her feet as before, and two new marks are made on the paper, giving the shoulder and the buttock line.

It is at once seen that this particular corset, as worn by this patient, throws the shoulders $1\frac{1}{2}$ inch forward and the hips

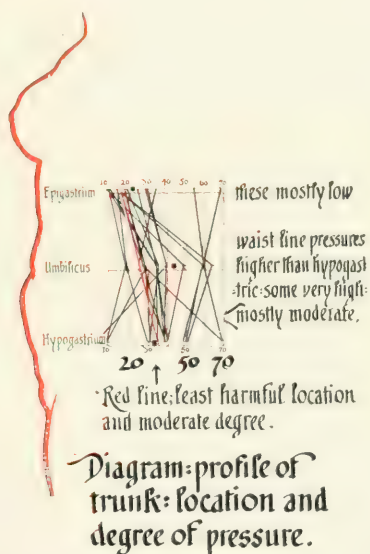


FIG. 34.—Chart plotting 20 consecutive pressures, the red line showing the least harmful amount and location of pressure.

1 inch backward. Therefore the trunk is $2\frac{1}{2}$ inches out of balance, and there is ample cause for ache and strain. The body is looked over. The condition of the back muscles confirm the findings, and perhaps the back of the leg adds evidence of spasm from long continued faulty posture.

A second patient comes in. She is round shouldered; her viscera sags and she has constant backache. She brings, to be tested before wearing, the new corset we prescribed. Her posture without the corset is noted by the method given above. She puts on the corset according to the instructions of the corsetière or the office nurse, fastens the garters and drapes the

sheet, and stands against the wall again. At once it is evident that the shoulders have gone backward, the hips forward, the whole center of gravity backward. The stoop is nearly gone. The pressures are found to be right, and the corset is commended. Exercise is planned for her and she is told to return soon to report, and that further alterations will be needed in one month or two, as only partial correction is undertaken at first.

With a little more trouble one secures more picturesque evidence by taking front and back outlines, and for this one needs no draughtsman's skill. A square that traces an outline may be improvised as follows: Into the groove between the covers of a thin book of about 10 inches in height, one may lay two pencils of different colors (Fig. 35) the tips projecting just beyond the top and bottom. Elastic bands hold them, and, if looped around the wood, permit a little play. The two hands hold the book steady and level as its short edge hugs the paper and its long edge follows the patient's body profile, marking the outline as it goes, from neck to upper thigh. More or less complex and costly devices I have seen or tried, such as those of Schulteis, Kellogg, Reynolds and Lovett, and others. Certain devices I have had made. Shadow tracings and photographs in numbers were used. With all these, accuracy in detail fails to compensate for cumbrous inconveniences and slow processes, as compared with a long pencil held at right angles to the paper by some simple square.

In time, as has been said, any man, or his nurse, may dispense with these means, if he choose, and will quickly size up conditions without records.

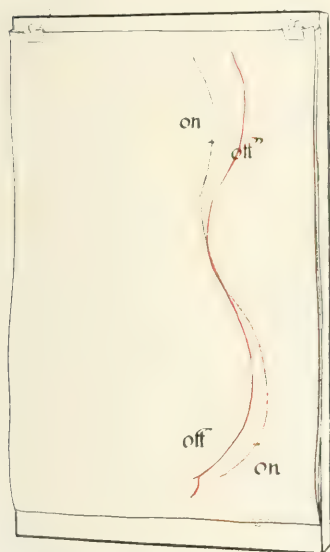
In noting pressures, in office work, manometer readings are needed only for research or to convince the skeptical—though to one's manometer hung on a wall the attachment of an extra under-corset-testing-bag by a T connection is a small matter. In practice, the test of the hand run down inside the corset suffices. The ribs first. Have they decently easy play? Is the epigastrium practically without pressure? Is the pressure in the umbilical region moderate—somewhat more than a man's summer belt? Is the suprapubic pressure more than the umbilical? It must be greater. Is this pressure well down to the pubes, or is there a gap between corset and bone, with lower abdomen thrust downward? Does the corset grip and girdle and get its real hold on the space between iliac crest and trochanter, as it should? How wide is the gape at the back? How



FIG. 35.—Simple method of recording outlines. Against a heel bar the subject stands. The paper is clipped to wall or drawing board. A pencil, held by elastics in the groove of a narrow book that acts as a square, follows the profile and makes a tracing. The knee action is shown by the snug sheet.

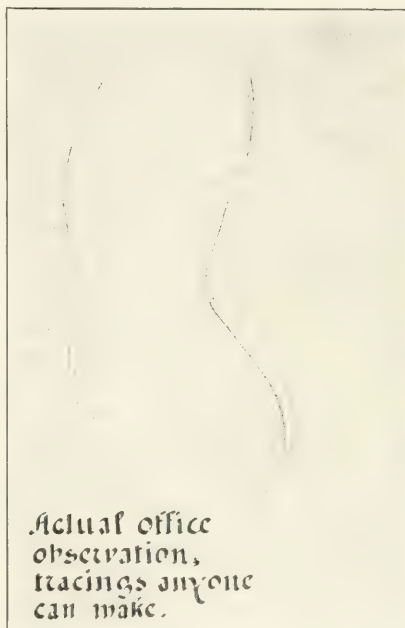
many laces? Can the patient unhook the corset without unlacing it? Unhooked, with steels drawn gently toward each other, is the gap more than two or three inches?

Costs.—As office cases average, for the most part little outlay for correction is called for. The corset that is relatively harmless; the corset which the owner can alter; the worn one just ready for a change to a better; these constitute a majority.



Tracing of back with corset on and corset off: paper held by clips.

FIG. 36.



Actual office observation, tracings anyone can make.

FIG. 37.

FIG. 36.—Outfit for the tracing.

FIG. 37.—Example of full record; without corset; with harmful corset; with tolerated corset, and the measurements.

Where a new corset of special fit and shape is needed, most commonly such can be found in a large ready-made stock, the alterations made when buying—say for from \$3 to \$6—from a corsetière who has been taught to understand medical needs. Corsets made to order expertly by those trained to our ideas are to be had for \$12, while corsets of the most durable material, least likely to alter in shape, run up to \$25 from expert hands. Often with the well-to-do one may elect to begin with a cheaper fitted corset, in order to bring about the desired result by degrees.

Even in the case of the wage earner where one has a reasonable assurance that corrected posture and lifted contents will enable her to resume work, abandoned for disability, one may argue that an outlay of \$6 or even \$12 is less costly than doctor bills.

Alterations are often possible. The most frequent fault, hourglass constriction, may often be corrected by using a separate lace in the six lower holes (provided the corset sets low enough to grasp the hips and lower abdomen), and by leaving the upper laces looser. This also makes, usually, for better



FIG. 38.—Simple tracing, seen to be expeditious—yet not without character.

posture, allowing wider separation above, and permitting the shoulders to drop backward. The seams most commonly needing alteration are shown in the dotted lines of Reynold's diagram (Fig. 51) and to these attention can be drawn. Thus it will be seen that it is possible to buy ready-made corsets, or to have these altered as many dealers will. In a certain time one learns to determine what figure can be fitted in a ready-made corset, and which particular cases call for adaptations or corrections that only the made-to-order article will help.

The following card is given to these patients:

"CORSET SUGGESTIONS: CHOICE, FITTING, ALTERATION,
ADJUSTMENT.

"In general there should be the least possible downward pressure on internal organs; no undue tightness, and no forward carriage of shoulders or droop of chin as a result of wearing a particular corset.



FIG. 39.



FIG. 40.

FIG. 39.—A group of 47 tracings superimposed to show that the normal and the average are by no means the same. The average chin is forward, the average abdomen is fat, the breast pendent, the back flat, the buttock long and low—only the average location of the shoulder is related to the normal.

FIG. 40.—Extremes in carriage of shoulder, red line being the normal. Both the individuals, shown by black lines, were disabled by backache and promptly relieved by correction of attitude, with muscle strengthening. Yet search for such a cause is rarely part of the office routine.

"The designs to be preferred show the front straight, with little or no incurve at the waist, long below, reaching nearly to the pubic bone; back curved, low at top; separate lace for lower six or eight holes.

"Pressure should be greatest around the hips, carefully and snugly adjusted, diminishing above this zone, being less at the waist line than below the waist. The lower ribs must have play. With regard to posture or carriage the shoulders must not be thrown forward and hips backward, the comparison being made first in undershirt and then after corset is put on. Large or

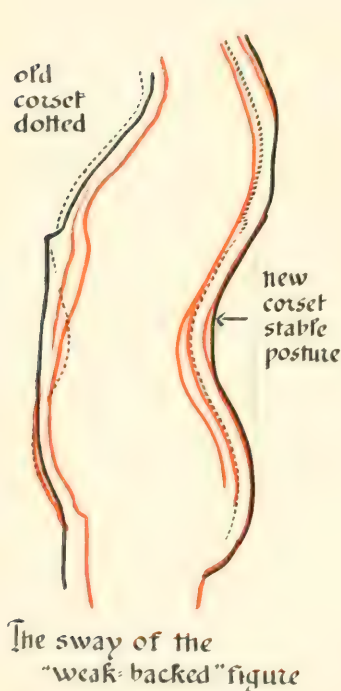


FIG. 41.

FIG. 41.—An unusual vacillation. The red line showing woman in underclothes. A stable posture and cure of backache were brought about by exercises and proper corset.



FIG. 42.

FIG. 42.—Postures rarely vary more than this in a given individual. Red shows patient in union suit; black, with corset.

relaxed breasts are to be supported independently, from the shoulders. Front or back lacing has to be chosen for the particular case. A stock corset may often be altered to suit the above, as well as to meet individual requirements.

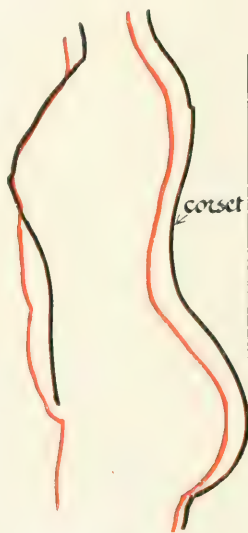
"When taken off, laces must be loosened. When front lacing permits, women with large or relaxed abdomens should put on the

corset while lying on the back, raising the body on the heels to send the organs upward. In any case, lacing should always begin at the lower edge. To reach downward inside the corset and raise the abdomen before tightening is another method of attempting the same end. The above applies to the dress corset.



**Stoop caused by
improper corset**

FIG. 43.



**Forward tilt of
upper part of trunk**

FIG. 44.

FIG. 43.—The red line without corset, the black with hourglass corset.

FIG. 44.—Here the corset improves the position of the shoulders which are much too far forward (see Fig. 47). It is to be noted that this is enough correction to make as the first step: too rapid straightening causes discomfort with discouragement.

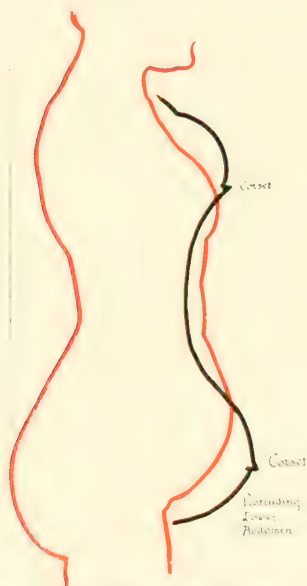
For active work a very flexible, short, loose corset may be worn, or merely shoulder straps to support the skirt."

It is not a difficult matter to adjust a corset to the standing figure so that the pressure shall be relatively harmless, the posture bettered, and the dressmaker pleased. The girdle grip is

planned to encircle the potential groove between hip crest and thigh top, and dips low to lift and not to force downward the abdomen and its contents.

Thus theory and corset are perfectly fitted. Patient, fashion, and doctor,—all are satisfied.

Thereupon the lady indulges in a habit of sitting down. She sometimes adds the practice of stooping forward. This is



Need of supervision after operation: the prolapse would have recurred.

FIG. 45.



"Health waists" may produce pressure downward and stoop.

FIG. 46.

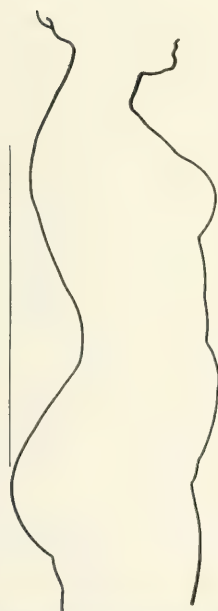
FIG. 45.—A not uncommon effect of an hourglass corset on a very relaxed abdominal wall, which in this instance would have soon resulted in return of displacement.

FIG. 46.—An average health waist: unless very loose and thin and with light skirts it may do harm.

disconcerting and exasperating. For it develops that the bottom of the hip girdle, planned for uprightness, is driven down on the front of the bent thigh, and as the result this edge presses uncomfortably. Or else the impact pushes up the whole carefully built structure.

At this point we abandon compromise. There is no perfect

compromise. Like the Greeks, we are driven to admit that faultless form and decorative dress are for the poses and purposes of leisure, and arduous work and active play demand loose and less comely clothing. Snugly encased, no one can scrub floors or pick up baby or tennis ball without squeezing the bowels and shoving things out of place. The harmless work-corset must be a non-figure-producing corset, merely a skirt sup-



Normal posture and proportions

FIG. 47.



**Average "neutral" corset:
short front: slight stoop,
moderate pressures.**

FIG. 48.

FIG. 47.—The normal posture, drawn from a considerable comparison of standards.
FIG. 48.—Red line, without corset.

port, loose enough to let the hand through inside, and is to be allowed when the worker will not consent to confine herself to skirts supported by shoulder straps, for work or athletics. As a separate proposition, for afternoon or evening, our lady may stand and be admired, encased in conventional mould, or sit complacently erect, bending only when she must, and then from the hips forward.

This is one of the many medical problems that call for team

work. Corsetières, women, and doctors must work together. Corsetmakers and retailers should have more knowledge of anatomy and more respect for physiology. Their aim should not be wholly to make a corset that reduces the size of the waist. They should study to provide corsets adapted to different types of individuals that do not unduly compress and restrain, that neither fatigue nor grievously deform.

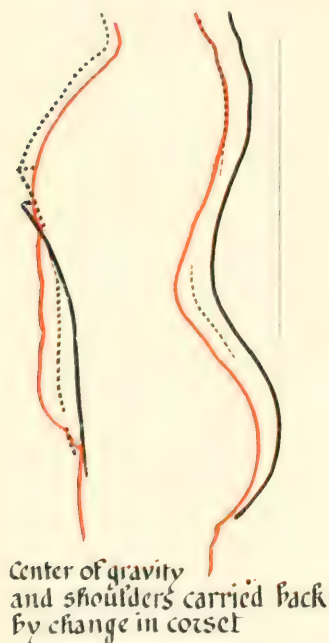


FIG. 49.

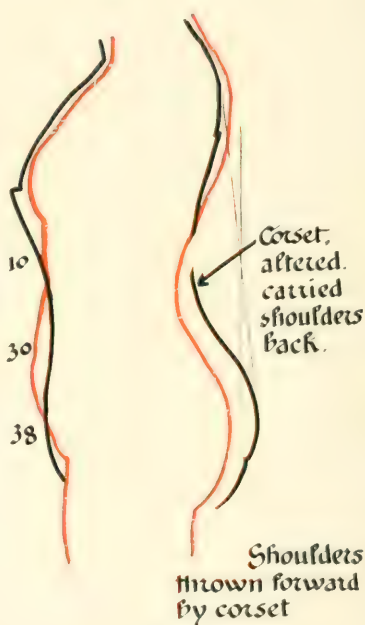


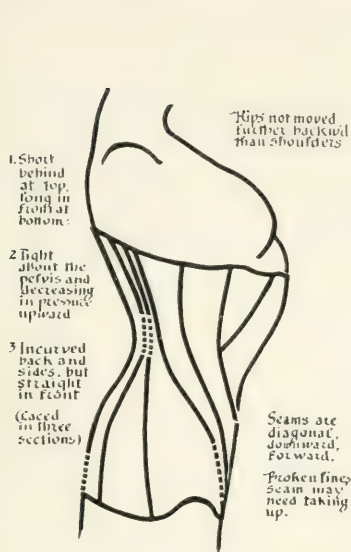
FIG. 50.

FIG. 49.—Posture bettered and headache lessened by change in corset.

FIG. 50.—The red shows this patient's normal posture. By altering the corset slightly the attitude corresponded with the red line; the pressures were as they should be.

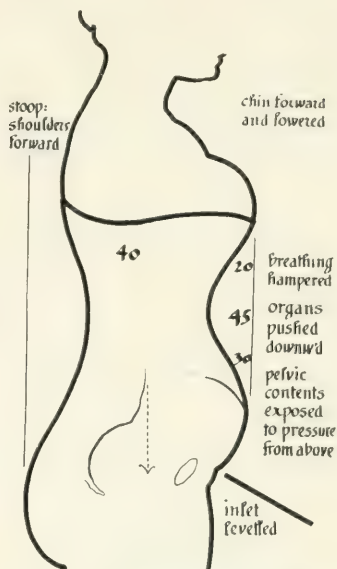
The practical application of this study is that, with a certain flexibility in our ideas, without straight-lacing facts to fit a theory, without attempting to girdle within one general rule all the variety of conditions, and with the expectation of failures at first, the practitioner may secure a number of excellent results, particularly in cases of displacement and defective posture.

By and large, the problem is, at present, hygienically insoluble. In the long years it will care for itself. First, there will be developed in the race habits of vigorous exercise which will make



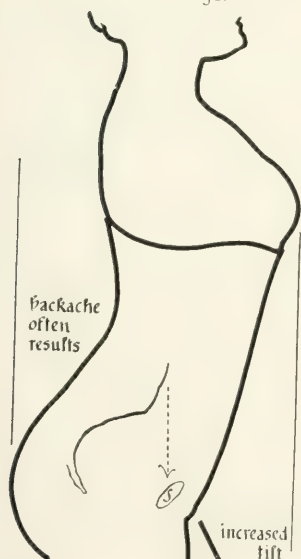
The "good corset" of Reynolds and Lovett

FIG. 51.



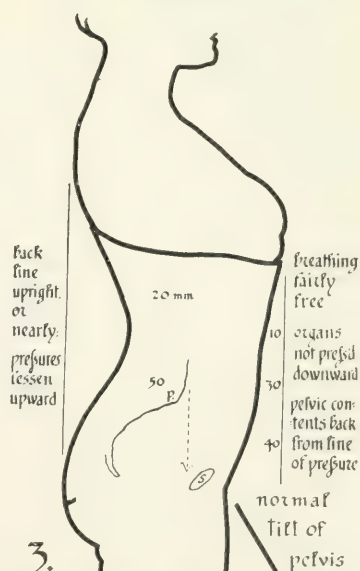
1. Hour-glass corset, vicious posture & pressure

FIG. 52.



2. Straight-front: shoulders far forward of hips

FIG. 53.



3. Abdominal corset: good posture, low pressures

FIG. 54.

FIGS. 52, 53, 54.—The three types of corset, hourglass, straight, abdominal. Vicious pressures compared with tolerable pressures; harmful forms vs. neutral; bad posture or good; pelvic inclination inviting displacement as against tilt which saves from pressures. Picturesquely unfavorable instances of the first and second class are here selected to contrast with a good or corrective example of the third.

restraint impossibly irksome; second, cultivation of the appreciation of the grace and beauty of the normal form of the body will render voluntary deformity ridiculous or pitiable; and,

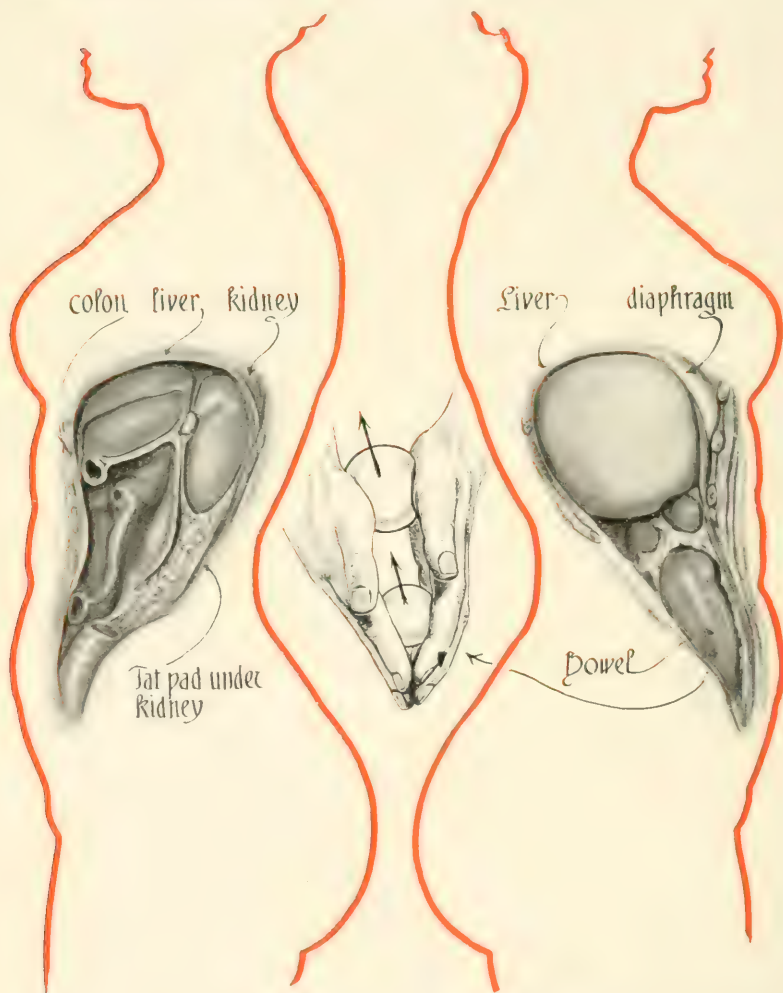


FIG. 55.—Nature's corset, the anterior abdominal wall: normal wedge-shape of abdominal cavity (from Cornung): strong front muscles hold the organs, or lift them up along the posterior slant.

lastly, such a knowledge of true taste in dress and understanding of real loveliness of line will be inherited and instinctive that art will replace artifice.

168 CLINTON STREET, BROOKLYN, NEW YORK.

THE APPENDIX AND THE RIGHT ADNEXUM WITH
SOME PARTICULAR REMARKS ON THE FORMER.*

BY

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ATTENTION has been directed in the last decade to the appendix as a possible etiological factor of right adnexal disease and the converse. The right pelvic region is one of the unlimited possibilities, though gynecologists now recognize the frequency with which the appendix and the right adnexum are dually involved and regard as unsurgical the closure of the abdominal incision without investigating the condition of the former.

A compilation of statistics bearing on this question more than verifies the clinical picture so often noted at operation of the adhesion between the appendix and the right tube or ovary, or, even more pronounced, the intimate matting together of these organs. Some believe that this condition is made possible, anatomically and bacteriologically, through Clado's ligament, more commonly known as the appendiculo-ovarian ligament. The anatomist Testu refers to this relation; also Deaver, in his surgical anatomy, not only pictorially in his precise plates, but descriptively, alludes to this ligament. It is claimed to be a prolongation of the mesoappendix into the broad ligament, and further, that there is a distinct lymphatic connection between the appendix and the adjacent adnexum. Deaver believes that this ligament can be regarded as a causative factor in right tubal trouble complicating appendicitis, while Krusen found the appendix involved in 15 per cent. of tuboovarian disease, Martin, in thirteen cases out of 276, and Ochsner, in fifteen in fifty-one.

Battle and Cornier think that the true interrelation between appendicitis and salpingitis is incompletely understood, but regard appendicitis as a primary source of salpingitis in many instances. Schmitt says that an appendix may be attached to a diseased adnexum, causing a perisalpingitis, but its occurrence is not uncommon, especially when it hangs in the true pelvis.

*Read before the Woman's Hospital Society (N. Y.) April 25, 1911.

When one considers the possibilities of a dislocated appendix, this is not hard to believe, especially as appendices have been found in hernial sacs, and even on the left side; while in a vaginal section of mine the appendix presented itself in the vagina, glued to the right tube. Schmitt further believes that a chronic appendicitis may cause a pelveo-peritonitis. Van Doren Young reports a case of appendicitis causing pelvic peritonitis, with involvement of the right tube, and eliminated the uterine canal as the source of infection. Fowler says that Clado's ligament furnishes a route of bacterial migration from the intestine to the right ovary, and that Kiefer has demonstrated the presence of the colon bacillus in ovarian abscess. He further remarks that the focal lesion in many cases of right adnexal disease exists in the appendix.

Treves argues that the ovary may be affected from the appendix. Hermes in seventy-five gynecological cases found the appendix diseased in fifty-three, and noted that this condition was more common in multiparæ than in primiparæ. His statistics are interesting. The appendix was involved in tubal pregnancy in 36 per cent.; in pyosalpinx, 58 per cent.; in chronic adnexal lesion, 68 per cent.; in ovarian cysts, 54 per cent.; in myoma, 66 per cent.; and he thinks that the appendix is affected within itself in 27 per cent. of all cases. Reid notes that an appendicitis not infrequently complicates a salpingitis, but the diagnosis of appendicitis is made only at operation. This statement is borne out by the fact that it is no uncommon thing at operation to find the appendix and the right adnexum matted together or adherent. Every operator has experienced this condition. Grieg Smith says "external traumatic influences may, by irritation or interference with the vascular return, set up appendicitis. Fixation of the appendix to a mobile organ is the most common example of this variety." He then mentions a case where adhesions existed between the right ovary and the appendix.

Bacteriologically considered, the microorganism responsible for this condition of ovaritis or salpingitis from appendicitis is undoubtedly the bacillus coli communis, which inhabits principally the large intestine and resembles, morphologically, very closely the typhoid bacillus. It can and does migrate from the intestine and appendix and attack adjacent structures. Proof of this is that this germ has been isolated from pus in tubal and ovarian abscesses. It can migrate and produce an acute

oophoritis causing an ovarian abscess. Reid believes that in a small percentage of cases this happens. Suppuration of ovarian cysts with twisted pedicle may be explained in this way.

With these data at hand, the possibility is made clear of the appendix infecting the tube or ovary, or the opposite. A few instances from my own records will bear out this assertion. The most interesting case was that of a virgin seized with true appendicitis symptoms. Section showed an acutely inflamed appendix glued to a right pyosalpinx, which was undoubtedly the result of a direct infection from the appendix. The left tube was normal. The genital tract could positively be eliminated as a route of bacterial invasion as the virginity of the woman was not only unquestioned, but there was every evidence that such was the fact. Another case of vaginal section for acute suppurative process in the pelvis allowed me to free the left tube and drain, but I was unable to enucleate the right adnexum. The febrile disturbance continuing, an abdominal section was performed three days later at which the right tube was found enormously elongated and drawn entirely out of the pelvic cavity and attached to an inflamed appendix, both of which were ablated, and uneventful convalescence followed. A recent section for unruptured right ectopic, disclosed the appendix attached to the gestation sac; and in a hysterectomy for fibroma uteri, with a small right ovarian cystoma, the appendix was found glued to the cyst wall.

A very recent case of large mass in the right fornix and diagnosed as a pus tube, showed on section a marked broad ligament infiltration with an acutely inflamed appendix adherent in its entirety to the upper and posterior surface of the indurated broad ligament. The appendix was easily stripped off and amputated and the wound closed, allowing nature to see to the absorption of the parametric exudate. Convalescence was uneventful.

Other personal cases could be reported, but their recital would only be a repetition of case histories and findings familiar to us all.

Jewett reported a case of acute appendicitis, which on section showed that organ attached to a right ovarian cystoma and the uterus in a fibroid condition. Another case of mine sectioned for right chronic salpingitis showed the appendix attached lightly at its tip to the diseased adnexum. I doubt not but that every gynecologist has experienced such constantly recur-

ring conditions, a statement which is verified by personal recital of operative experiences with other different operators.

As regards Clado's ligament, I confess that at times I am puzzled whether such an anatomical relation exists. I think I can satisfactorily demonstrate it in some cases; in others I fail to differentiate it from surrounding structures and to see anything which appears to me as a ligament or even a slight approach to it. I have made it a part of my routine technic to search for this ligament. In one case where it apparently appeared distinct, and the appendix and tube were attached, I made an attempt to remove everything with the hope of presenting the specimen as a demonstration of this anatomical relation, but after ligation, whatever ligamentous connection existed, disappeared. It is not possible, in my opinion, to show clearly this ligament at all times. If it is present it appears merely as a reduplication of, or a fold in, the loose peritoneum in the iliac fossa. In some cases it obtrudes itself prominently.

Kelly and Hurdon, in their classic on appendicitis, investigated Clado's ligament with the closest possible scrutiny and state that "while admitting the occasional presence of a peritoneal fold passing in a transverse direction from the iliac fossa to the ovarian vascular pedicle, positively deny the existence of any considerable vascular and lymphatic connection between the ovary and the appendix by means of this peritoneal fold." They have embryologically traced the development of ovary and appendix and show that their development occurs at some distance from each other. They say, "any subsequent vascular connection between the two organs must, therefore, remain confined to the usual small amount of lymph and blood capillaries of the parietal peritoneum."

While they quote Clado's mentioning of the establishment of a lymphatic connection between ovary and appendix, all their experiments in injecting the appendix lymphatics from the periphery to the center demonstrated that the lymph channels of the appendix pass inside the meso-appendix toward the ileo-colic group of glands, or through the cecum in the same direction ultimately to the same group. *Not one single lymph channel was seen to pass in the peritoneum toward the ovary.* They further quote Barnsby as denying the existence of Clado's ligament, having never found it in 127 cadavers. Fevy in seventeen did not find it, and Poirier and Cuneo deny with posi-

tiveness any such structures as the appendiculo-ovarian ligament.

My own theory as to the interrelation between appendicitis and right tubal disease, as to the one causing the other or the reverse, is that gravity plays an important part in producing such conditions. We all know how close the appendix lies to the right adnexum. Increased peristalsis, different bodily postures, a loaded cecum, a dislocated appendix, enteroptosis, and a long appendix with a correspondingly long meso-appendix combined with gravity, I believe simply bring the appendix and adnexum into juxtaposition, while the inflammatory lesion present in either with its localized peritonitis is responsible for the adhesion of the one to the other. The infection then travels through the adhesions. From our pathological studies we know that infections may travel by such routes, once adhesions are established.

As to whether appendicitis ever simulates tubal or ovarian lesions, I can only state the experience of one author who claims that "appendicitis never simulates," yet on operating for appendicitis encountered a pyosalpinx and a normal appendix. The differential diagnosis of these two conditions, each with its own train of symptoms, and both so closely related anatomically forms an interesting chapter in our errors in diagnosis. The findings per vaginam in the one, the reflex gastrointestinal symptoms in the other, the presence of rectus rigidity, the value of McBurney's and also Morris' point, all have their place; but when both the appendix and tube are involved who can make, always, a positive ante-operative correct diagnosis? Is it not true that with the diagnostic aids afforded us in these days of modern surgery—the microscope, the pathologist, the bacteriologist, and our own knowledge of inflammatory conditions, gynecological findings are not always actually revealed till the abdomen is opened? Just as sometimes obtains in other surgical conditions, we dislike to be baffled in our diagnosis. The term "exploratory laparotomy" is disagreeable to our ears, yet how many surgeons and gynecologists have had an abdominal section reveal different lesions than were diagnosed. And for that reason no hard and fast dictum can be formulated. We cannot with confidence say appendicitis never simulates, any more than we can with positiveness always assert the presence either of an appendicitis or a tube-ovarian condition separately. Remember that in presence of symptoms

the abdomen has been opened and a normal appendix discovered. Of what value then the statement that the appendix never simulates other diseases?

And to digress, the surgeon who tells me he can palpate normal appendices or an inflamed one, through skin, fat, external oblique fascia, transversalis muscle and fascia, and finally peritoneum of varying degrees of thickness, in fact through the whole abdominal wall in layers, and rigid at that, as it is during the examination, and with the appendix lying, as it often does, behind the cecum, is, I believe, mistaken. I have heard operators say "I can roll it between my fingers." These must be the men who always can palpate normal tubes and ovaries. Perhaps some men can palpate an inflamed appendix, but I have never satisfied myself that it could be done, although I have palpated an abdomen immediately after a well-known operator had affirmed that he felt the appendix. It may be that I lack a "tactus eruditus."

A word as regards operative technic. If during operative work on uterus or adnexa, time be an element or a reason to hasten the operation and we wish to remove the appendix, don't hesitate to simply amputate it by tying off the meso-appendix, and the appendix, and cauterizing the stump with with pure phenol, or clamp and amputate with the Pacquelin. It is a surgical procedure, although it lacks the refinement of the complete operation, that is, inverting the stump, using a purse-string suture, and lemberting, if electing to do so, the peritoneum over the site of the inverted stump, the usual Dawbarn technic. I have done a number of cases after this method, when pressed for time, and when I thought the appendix should be removed, and have experienced no untoward results. An opportunity was afforded me to inspect the stump of an appendix removed in this manner on sectioning the same patient some months later for a pelvic lesion, and there was found merely a tit-like projection on the cecum entirely covered with serosa and no adhesions.

At a meeting of the Woman's Hospital Society some six years ago, when Baker of Boston read a paper advocating the removal of the appendix in all laparotomies, a few interesting points were evolved. One was that many apparently normal appendices removed as a part of his technic, showed pathological evidence, on later microscopical examination, of chronic appendicitis. Again, a number of gentlemen who discussed the

paper reported that in order to save time they had simply amputated the appendix as above described, and no bad results had followed. Dr. J. N. West especially advocated this procedure. No case of hemorrhage into the bowel following this operative procedure has, to my knowledge, been reported, in distinct contrast to the twenty-two cases of severe hemorrhage into the gut, following the inversion method, which were collated by Wyeth and reported personally by him at the meeting of the American Medical Association, at Atlantic City about four years ago. Further, several operators confessed that with their experience as a guide they would now always remove the appendix, as they had had appendicitis develop shortly after abdominal operative work on the uterus or adnexa, and during the convalescence of the patient. Dr. J. Riddle Goffie was the only discussor who decried ablation of the appendix in all instances. It is well known that some surgeons have put themselves on record in stating that it was unsurgical to remove the appendix unless ocular inspection and symptoms warranted; for they believe that amputation of a normal appendix affords an increased risk, by adding the danger of sepsis through possible escape of intestinal contents during the operation. In other words, no surgeon should increase the danger of sepsis by unnecessary fads and fancies, and that unless the condition of the appendix warranted its removal, it should be severely let alone. In answer to these arguments, it is known that with our improved aseptic technic, the surgery of a normal appendix should involve no risk, and that a patient is better protected without this useless organ than with it. It has been no uncommon experience to have my laparotomy patients insist on removal of their appendix, whether healthy or not, although the operation was done primarily for some diseased condition of the generative organs. The laity is becoming educated in regard to the appendix. I have even heard of patients going to a hospital and insisting on removal of their appendix, although no symptoms had ever presented themselves to warrant the deduction that the appendix needed removal. One case I know of personally. The others were related to me.

The whole subject of the relation of the appendix and right adnexum is a mooted one. Statistics, verified by substantiated clinical data, appear to show that appendicitis may cause right adnexal disease by migration of the colon bacillus and that right tubal or ovarian lesions can and do reflect their inflammatory

processes on the appendix, the infection travelling through the intimate adhesions. Most operators prefer removal of the appendix although operating for different conditions, though this should not be done except with the patient's consent. Cases are constantly recurring which more than convince us that the appendix, even if normal, is a dangerous possibility. The element of time can be considerably reduced, if we simply amputate and do not perform the refined operation. Baker's cases showed over 30 per cent. of apparently normal appendices removed as a routine practice of his technic, to be in a state of chronic inflammation.

The question resolves itself into this: If an operator has time and believes the appendix diseased, when operating for other conditions, he will remove it. If not, he will do as his judgment dictates, statistics or no statistics.

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DRESS AND POSTURE IN THEIR RELATION TO PELVIC DISEASE.*

Paper read by DR. R. L. DICKINSON.

DISCUSSION.

DR. WILLIAM E. STUDDIFORD.—Any consideration of the subject of the evening, dress and posture in their relation to pelvic disease, quickly resolves itself into a discussion of the corset and its influence on the abdominal organs. We all agree that an ill-fitting and improperly constructed corset is often harmful in its effect, yet the correction of these harmful influences is too frequently neglected both by the general practitioner and the specialist. We are too prone to content ourselves with the pathological conditions found on examination and to hold them responsible for all the pains and symptoms complained of, with the result that much of our treatment and many of our operations are only partly successful until we suddenly discover the fact that a badly fitting corset which compels a faulty posture is nullifying our efforts to give relief. The admirable work of

* See original article, page 1022.

Reynolds and Lovett upon this subject has added new lines of thought in the consideration of dress and posture. They have well stated that many of the abdominal ptoses are the result of static conditions and I believe could go further and state that many static conditions were due to the prolonged use of improperly constructed corsets. It has been my practice for a number of years to note the character of a corset worn by patients coming to me for consultation and to make all vaginal examinations first with the corset in position and afterward with the corset loosened or removed and in this way attempt to estimate the influence, if any, that the corset has upon the pelvic condition for which relief is sought. The result of such practice is well illustrated in the following case:

Mrs. X. consulted me in July last, complaining of severe lumbar backache with marked digestive disturbances, flatulence and pain in the epigastric region and feeling of weight and pressure in pelvis. She was a multipara, having had five children, the last two years ago. Her labors were normal and there had been no complications. On examination the pelvic floor while somewhat relaxed, considering the number of her confinements, was in remarkably good condition, the uterus somewhat enlarged with slight bilateral lacerations of the cervix. The broad ligaments and uterosacral ligaments were tender to pressure and the veins in the broad ligament seemed to me somewhat dilated. The uterus was in an antiflexed position. The abdominal muscles were greatly relaxed. At the time she was wearing a corset that caused considerable waist constriction and in the upright position with the hose supporters on a stretch caused marked downward pressure of the entire lower abdomen. Her menstrual flow for the six months prior to my seeing her had been increasing in duration and quantity. I advised a suitable corset and told her to wait for several months to see what effect it would have on the condition. Within two weeks after her return home I received a letter stating that her condition was greatly improved. The backache had disappeared and her digestive disturbances were very much lessened. Three weeks ago she again consulted me, simply reporting at the time of her visit to the city to order new corsets. The entire picture of the case had changed. The woman had put on weight, the backache was entirely relieved, and the feeling of weight in the pelvis had disappeared. Her digestion caused her very little disturbance. The menstrual flow had diminished in quantity and duration.

In a series of observations made at Bellevue Hospital and at the Gynecological Clinic of the University and Bellevue Hospital Medical College an effort has been made to determine the amount of pressure exerted by the corset upon the pelvic organs. Following the idea suggested by Dickinson, an air inflated pessary, to which a long rubber tube was attached so that it could be connected with the mercurial column of the ordinary Janeway

sphygmometer, was used. This pessary was inserted in the vagina and inflated and the reading of the mercurial column recorded. With the patient in the recumbent position the reading of the column was noted on deep inspiration, coughing and sneezing, and the same reading was made with the patient in the sitting and standing postures, these readings being made first without the corset in place and afterward with the corset on. We quickly found that in taking these readings several factors had to be taken into consideration: First, the strength of the abdominal muscles, the strength and elasticity of the pelvic floor, and the inclination of the pelvis. About twenty patients in all have been examined. While the results of these observations were of necessity incomplete owing to the few cases examined, certain facts seemed fairly constant and have a bearing on the subject under discussion. In women with apparently normal pelvic organs (six cases in all) when in either the recumbent, sitting or standing posture, normal respiration made no change in the column of mercury. Coughing, sneezing or straining caused a marked rise. When, however, the ordinary corset, all of them of improper construction, that these women had been wearing was put on, normal respiration began to cause a slight rise and fall in the column and the rise after coughing, straining or sneezing was much more marked. It seems fair to assume therefore that under normal conditions no appreciable pressure is exerted upon the pelvic organs; that the intraabdominal pressure is so adjusted that in the ordinary movements of respiration, walking, standing, sitting, etc., the pelvic organs are not affected. On the other hand, if corsets are used that cause constriction at the waist or upper abdomen and at the same time pull downward by the weight of clothes they are required to support or by the direct drag of hose supporters attached to them, we then find the pelvic organs are displaced downward and the ordinary movements of respiration, walking, etc., have an appreciable effect. Further demonstration of this fact was made by means of the X-ray. An Outerbridge stem pessary was fastened in the cervix and radiographs made of the pelvis, first with the patient in the recumbent and upright postures without corsets, then in the same postures with the corsets adjusted. In all these plates it is noticeable that the position of the pessary is much lower in the pelvis when the corset is worn both in the recumbent and upright postures. If this is true it is not hard to imagine the ultimate results of long continued pressure of this kind, especially if the woman is obliged to do more than ordinary work in either the sitting or standing posture. The circulation of the pelvic organs must of necessity be interfered with and a condition of passive congestion sooner or later develops with a corresponding increase in the size and weight of the uterus. The abdominal muscles being restricted in their action gradually lose their tone and are incapable of supporting the abdomen and the ultimate result is a general ptosis with the associated gastric and intestinal distur-

bances. The pelvic floor being subjected to prolonged and unusual strain gradually loses its supporting power and the projection of the pelvic floor and the organs above it becomes lower and lower, all of these results being more quickly obtained if the woman is obliged to work for her living or the abdominal muscles and pelvic floor are further weakened by child-bearing. It is my firm belief that many of the cases of sharply ante-flexed and often retroposed uteri found in women who have lead a sedentary life, such as school teachers, students, stenographers, are due to the wearing of faulty corsets at the time of adolescence when the uterus was developing, constant pressure exerted on the pelvic organs at that time by the corset being further aggravated by faulty posture while at work.

At no time is the ill-fitting corset more deadly in its effect than after parturition. If the abdominal and pelvic muscles already weakened and stretched by the prolonged pressure of pregnancy and labor are subjected to the additional strain of the waist constriction and downward pull of improper corset, backache and uterine displacement quickly follow. Postpartum cases should not wear corsets at all for five or six weeks after the birth of the child, the lower abdomen being supported during their first getting up by an ordinary abdominal bandage and later on a proper corset should be made for them. After trying this plan of treatment for the past twelve years I am more and more impressed by the excellent results obtained, and am gratified to know that the great majority of the patients continue to wear corsets made on the same model that was prescribed for them during the puerperium. It is a fact worthy of note that in these cases where a proper corset is used that two or three months after the confinement it is necessary to reduce the size of the corset, the pressure around the hips seeming to aid in the removal of some of the fatty tissue that is so apt to accumulate during pregnancy.

The necessity of a proper corset is also evident after abdominal section. We have discarded the old abdominal supports and in its place have a proper corset made that serves a two-fold purpose, viz., supporting the injured abdominal muscles until their full function is restored and frequently correcting one of the causative factors of the condition requiring operation.

Two cases coming under my observation during October showed the necessity of such corsets. Mrs. A. was operated upon in November, 1909. A supravaginal hysterectomy was performed for fibroids. There were no complications. Her convalescence was rather slow on account of the long continued bleeding from which she had suffered prior to the operation. She was fitted with a suitable corset after the operation and in May of the present year she reported to me she was feeling better than she had in many years. In June she made preparations to go away for the summer, in the course of which, in order to wear clothing she had had a year before, other corsets

were purchased. In October she reported that the summer had been most unsatisfactory. That she was feeling draggy, had some backache, was unable to do much, and walking was tiresome. Examination showed no complications connected with the operation, but I immediately noted she was not wearing the corset that had been prescribed. I advised her to have new ones made with the result that a month later she reported that she was feeling much better, could walk further, and felt that she was regaining her usual strength.

Miss. X. gave a somewhat similar history. Her operation, performed in August, 1909, was for the same condition—supra-vaginal hysterectomy for fibroids. She also was fitted with a suitable corset after operation and rapidly regained her strength and vigor. In June she went abroad for a two months stay. In Paris, among other articles, she decided to purchase new corsets. These she immediately put on and started for a walking trip in Switzerland. At the end of the first week she began to have a great deal of abdominal pain and the trip was abandoned. The abdominal discomfort became so much greater that her trip was curtailed and she returned home in the middle of July. Examination at that time showed no complication connected with the operation. Symptoms pointed possibly to some slight omental or intestinal adhesions, but the fact was apparent that the corsets she had been wearing were causing a marked waist constriction and downward pressure of the lower abdominal segment. She also was advised to return to the old corset with the result that in September she reported that she was playing tennis and golf, and that all of the painful symptoms had disappeared.

In prescribing corsets for patients in whom it is evident that the corsets they have been wearing are causing harmful disorders, it is not only necessary to have the corset made by a competent maker but absolute instructions should be given as to the method of putting a corset on.

An explanation should be made of what the corset is expected to do. A corset should always be unlaced when it is removed and the laces so arranged that the corset can be tightened in either two or three sections, that is the lower and upper section, or lower, middle and upper section. When putting the corset on it should be fitted well down over the hips and the hose supporters attached before the corset is laced. The lacing should then start in with the lower section of the corset and drawn as tightly as is consistent with the comfort of the wearer. Afterward the middle section should be tightened, but much less than the lower one, the upper section being left comparatively loose. These instructions I have found necessary because not infrequently where patients have had a corset made they have complained of them, but on investigation it was found they were not applying them according to direction.

DR. DORMAN.—One of the first questions the puerperal woman

asks is when she may put on her corsets. The average woman complains that she is absolutely uncomfortable unless she can get back to corsets after her baby is born, when her figure is very markedly changed. As a rule, she has put on 15 to 20 pounds of adipose in addition to the weight of the child and uterus, and the question of what we can do, when we may allow them to wear corsets, is very important. As a rule, I follow about the scheme that Dr. Studdiford has outlined, after a patient has gone four or five weeks, to have a very loose adjustment of the corset the woman has, is allowed, in order that she may put on some clothes. Certainly not before four or five weeks is she entitled to appear in a corset. And even then the corset she applies is very apt not to be more than a temporary success. Not that the corset reduces the woman's hips, but there is a tremendous change in her adipose as she gets active. She has some tendency to go back to the condition in which she was before; and where some of them have put on a great deal of weight through their pregnancy, after they have gotten up and around and active, many of them get back very nearly their former figure. So we must remember that these corsets at first tried after four or five weeks will have to be entirely changed a few months later.

DR. WARD.—I would like to ask Dr. Dickinson whether he employs the exaggerated elevated hip posture in some of these cases when putting on corsets. We are all familiar with the method in cases of enteroptosis when the patient is taught to lie down and elevate the hips and then put on the corset while in that position. I would like to ask whether he employs that method in cases that seem to be suitable for it.

DR. VINEBERG.—Is it because the patient has pain when she wears the corset, or, if the patient complained of backache when she is in bed for instance, is it only just when the patient wears the corset that you come to that conclusion?

DR. STONE.—I wish that Dr. Dickinson and Dr. Studdiford, if possible, in summing up the discussion would say or at least would give us two or three or four straightforward points as to what is really a good corset; that is, their opinion from the special study that they have made, simply to bring those three or four points out clearest. We do not, of course, expect a guarantee to go with it; but I must confess that if I were asked that question I would be unable to answer it. And then, again, I would emphasize a little what Dr. Dorman has said and in order that neither Dr. Dickinson or Dr. Studdiford perhaps make a special point of it, as to the advice we should give patients about when they are to resume the use of corsets. I frankly confess that I don't know. I try to individualize and do the best I can, but I must confess that when I tell a patient she can put her corset on to-day or to-morrow, I really don't know very much about what I am talking about, whether she really ought to have it on or not. I don't expect that is going to be answered in an altogether satisfactory way, but it seems to me that this work is really at its beginning,

that by bringing out three or four points, we can follow along and find out whether they are really true or not ourselves. That will form a basis and lines for us to follow. It does seem to me we ought to be in a position to give a little information that we can feel tolerably certain about.

DR. McLEAN.—There is one word Dr. Dickinson dropped in going over his paper that is very valuable, that is, the lack of education of women as to the normal form. It is a rare thing to find a woman who really understands what her form ought to be and she has an idea her waist ought to be cylindrical; there is not one woman in fifty knows her waist measurement and lines are the same at eleven as at twenty; that they stop their growth and development at the waist at that age, and then follows the development of hips and bust, while the waist measurements remain the same. It is for that reason I find in practice women are constantly teaching their girls to put on corsets, and that is where the pernicious activity of the corset comes in, in my experience. Another pernicious action of the corset is the splinting of the muscles of the back, and a splinting of these muscles by corsets as they are generally made and applied, thereby bringing out that evolution, the law of nature, that the muscle splinted will become atrophied and if it become atrophied, it becomes weak and if it becomes weak support is lost.

It is simply an axiom and perfectly simple to understand. It is a positive fact that nearly all women who wear these mischievous corsets have sufficient atrophy of those muscles to produce that pain in the back. The moment they leave them off, they call for them to be put on again to give them artificial support for the muscles which have not been allowed to develop and maintain themselves.

DR. DICKINSON.—The necessity of the orthopedist working with the gynecologist has been impressed upon me and I formed a combination before I heard of the Reynolds-Lovett partnership many years ago. We have with us to-night an orthopedist, Dr. Truslow, and I would ask that the President invite him to participate in the discussion.

DR. TRUSLOW.—I thank you very much for the honor of speaking to your Society. I think, as Dr. Dickinson has pointed out, the gynecologist and orthopedic man tackle the subject from somewhat different points of view. You discuss in particular the pelvic organs. The question brought out by Dr. Dickinson and by Dr. McLean is that in order to know the ideal, we must find out what the ideal position, ideal shape and posture of the human figure are. The orthopedic surgeon, who is accustomed to studying the human figure, has constantly in his mind an ideal, and he looks upon this question of posture from the standpoint of bodily deformities, but the deformities he has to deal with are those of the spine and of the trunk. He, too, finds himself noting these same backaches due to these same faulty positions. We see a great many young adolescent girls, from twelve to twenty years of age, with back-

ache. Of course, we deal with bony deformities—I am speaking particularly now of deformities caused by scoliosis. In treating these we find ourselves using corsets of a very much firmer texture than the corset of the store. We make a plaster-of-Paris mold of the entire trunk. This we carefully remold and remodel to meet a more nearly normal condition. My only reason for speaking of that is that it has been my observation on a number of cases of this kind that only a stiff corset will hold the correct balance.

I use very thin celluloid which is partially an entire piece, with no flexibility; but, as I say, it is for a different purpose. In using such a corset to hold the trunk in a correctly balanced position and with the elimination of muscle strain, our patients, too, get the relief from pain. This often has not been the primary object, but it is a usual result.

DR. POMEROY.—I would like to ask Dr. Dickinson and Dr. Studdiford as to whether the gentlemen have acquired another point of view in dealing with this matter with the manufacturers. Of course you are studying and we are studying the individual effects, but the corset in a wholesale garment, so to speak, and I would like to know whether Dr. Dickinson's experience is that he finds it necessary as a future programme to educate the manufacturer, and whether he has discovered that manufacturers up to any extent actually study this problem from a broad point of view, and whether he finds any general progress in the wholesale manufacture, perhaps applied to the individual in custom-made garments, whether he finds any form that makes it any more practical for us to prescribe some one corset under some one name, and some practical way in which we can specify to patients the kind of corset they are to get in any simple terms.

DR. DICKINSON.—I might say, Mr. President, that, as Dr. Studdiford has said, some of our work is tentative. I have studied the attitude on nearly 200 cases, pressures on some eighty cases, and vaginal examinations necessarily on a few selected cases, I think not over twelve in all. The need of writing a paper has always toned up a man; I purpose going further.

Concerning the puerperium, of which so much is said, I think Dr. Stone has hit it when he said we must individualize the cases. Some women have abdominal walls which will return to normal so rapidly that not much attention, detention, need be made about putting on the corset. Dr. Edgar has called attention to the flabby pelvic class who have to go two or three times as long as the ordinary woman. She is content to hold off her corsets a month and with most women that suffices, but some particular case may have to have a proper band before that time and after. I must admit that I have not given the detailed attention to the average case postpartum that I ought to have done. As to the postoperative corsets, I admit the very same thing.

In the matter of corsets, one thing has not been mentioned, that is, that any change in the model involves a good deal of change in the dressing, and also that any change that you put into the structure of a corset is going to so change the fat pads and the general shape of the patient that after two months the corset may have to be changed again.

These huge bellied women over here (indicating) when you begin to put the pressures on right will atrophy remarkably. All my puerperal cases have regular exercises laid out, as a number of the postoperative have.

As for the practical questions, it was only the feeling that I was using too much time that made me skip over many items in my paper. What is the examination necessary or desirable for every woman entering the office to determine whether her corset is right or not?

As Dr. Reynolds has said, after you get going, it is a matter more or less of instinct. You will see every woman before she takes her corset off, the nurse will look at her in it as she puts it on.

Dr. Pomeroy's question is a very practical one and should have been answered. Let me first give the elaborate way and then the simple way. Dr. Reynolds' is the ideal condition. He has been working it out for years. The woman who makes his corsets is Miss T. She is a woman of intelligence who has gone into this matter, but she is keen partly because it is business.

When a corsetiere's business increases beyond a certain limit her medical work fails. The corsetiere does not want to be bothered with it. I was talking with one woman who makes a specialty of this work and asked her how she could run the medical end of it and she said: "Doctor, I look at it this way. I have a good business here, but I know that to-morrow the fashions may change and I might be left high and dry, and so I have built up a good medical practice and so long as I please these doctors, I have got something to fall back on. It is a business idea; I have got something permanent I can fall back on." She charges twenty-five dollars and will take no end of pains. There is the twenty-five dollar point of view, and the women who are sufferers will some times scrape together the twenty-five dollars required.

There are plenty of neutral corsets you do not have to do anything about. In the case of a ready-made corset, the moment you put the double laces on, it will often do if the patient has a long enough corset and is shown how to put it on and how to lace it. Your nurse can be instructed to look after this for you and she will tell you when it is right. That meets the need of a certain number of people whose corsets are not very bad.

If for six dollars you can have a ready-made corset that will do the work, it is within the limit of most people. They pay two, four, or six dollars for the ordinary ready-made corsets.

The corsets mentioned by one of the gentlemen are, on the whole, good ones; but the error of the four or five I measured

was due to the greater pressure at the umbilicus than the suprapubic, but having explained the trouble to the patient, she corrected it. There are various others that are right.

Let me say a word about lacing the corset referred to, as it is of great advantage. Heretofore, we have been able only to get expensive French corsets lacing and hooking in front, but a few corsets have no laces in the back, and are without a great, wide, open back. To my mind, it is a faulty matter to have a lace open in the back. As to the posture, the ordinary patient can lift her abdomen and fasten her corset upward. The patient with enteroptosis, with displaced kidneys, with very marked prolapsus, should take the reclining position to put on her corsets.

In answer to one other question, the backaches, the atrophy of the muscles of the back with subsequent backache, the attitude backache, need more studying.

DR. STUDDIFORD.—Taking up the question of Dr. Stone as to how you are going to judge about a corset after the puerperium: We find the suitable answer in the majority of cases, when the question of the corset comes up, is to request the woman to put the corset on and let us see it. As a general proposition, I think you can very readily show her why that corset is bad. In the first place, the woman has put on a great deal of weight, the muscles are relaxed, and the corset she wore before she became pregnant, or in the early months of pregnancy, no longer adapts itself to her figure, and they very quickly—a few hours' experiment with it, as a general rule, is enough to have them discard the corset; and when it comes to the question of a new corset, I explain why it is necessary to have the support on the lower abdomen to lift up on the abdominal organs, and I find that there is very little difficulty in having them get a properly made corset, and as a general rule, with a great deal of success.

One point in the question of the ordinary ready-made corset. The only difficulty we find with them is the fact that they are based on waist measure. The woman decides what her waist measure is and she consequently goes in and asks for a twenty-two- or twenty-five-inch waist corset. Of course, when a woman has been wearing faulty corsets with a heavy pull on the abdomen and more or less enlargement, the moment she gets on a proper corset, it shortens her anterior posterior diameter and consequently the waist measure is somewhat larger. We found it worked fairly well where patients have said they could not buy or could not have a corset made and I have explained to them the necessity of having a corset that came down low on the hips, tight across the hip bones, and having them get a corset one or two sizes larger than the one they were wearing, with the result that many of the stock corsets built on the straight-front lines will work fairly well; at any rate, they will relieve some pressure.

It is an advantage to have the corset lace in front for the woman has to unlace it and readjust it every day. The trouble

with the ordinary case frequently is the fact that they get it fitted and they never change the laces. Consequently, if they happen to get up some morning with a little more distention of the abdomen than usual, why the corset is a little tighter than it was the day before. There is no question whether the corset is absolutely the proper one, the neutral one, or the bad one, it should be laced up every day and readjusted and fitted to the condition of the time.

The following report was submitted by a committee appointed to draw up a paper which could be distributed by dispensaries and the Board of Health in answer to the question:

WHAT EVERY WOMAN SHOULD KNOW TO PROTECT HERSELF
FROM DEATH BY CANCER OF THE WOMB.

1. Cancer of the womb is at first a local disease.
2. Thus far the only reliable cure is operation, but, in order that the operation may be attended with best results, it must be done *early*.
3. Hence the great importance of detecting cancer of the womb at its very beginning.
4. There are no positive signs of the onset of the disease, but there are symptoms which are suggestive and should lead the woman to consult reliable medical authority.
5. The most important of these is a blood or a blood-tinged discharge occurring independent of, or at other times than the monthly period. This staining or spotting may be brought on by exertion or slight injury, as intercourse, or the introduction of a douche nozzle. The discharge may, at times, be thin, pale yellow, or watery.
6. Any change in the monthly period of a woman, at any time of life, demands examination, particularly if it occurs at the time of the change of life.
7. Regarding the menopause (change of life), a harmful error is common among women and is even shared by not a few physicians. It is thought that the change of life is naturally accompanied by excessive flow at the monthly periods and that there may be a flow, even between the periods. Such an opinion is totally wrong. The natural occurrence at the change of life is a decrease of the flow with longer intervals between the periods until they cease entirely. Hence any increase in the amount of the flow, or any increase in its frequency, is wrong and demands the most careful investigation.
8. This excessive bloody flow, or too frequent flow, or a watery discharge, does not always mean cancer. It may be due to other causes, but often this can be known only by a scraping and a microscopical examination of the scrapings or of the so-called ulceration of the neck of the womb. Hence any offhand statement, even by a physician, that the irregular flow has no significance should not be heeded.
9. Too great emphasis cannot be laid upon the two foregoing paragraphs, for many a life has been needlessly sacrificed by

the opinion that the menopause (change of life) is naturally accompanied by all kinds of discharges and bloody flows.

10. Pain and loss of flesh and strength are not early symptoms of cancer of the womb. They may not even be present when the disease is well advanced.

11. Women of all ages may develop cancer of the womb, but it is most common between forty (40) and fifty (50).

12. The actual cause of cancer of the womb is still unknown. But it is known that constantly kept up local irritation may lead to the development of cancer. Hence a woman should not neglect the attention of injuries or any local disorder of her generative organs.

Meeting of February 14, 1911.

The President, J. LEE MORRILL M. D., in the Chair.

DR. J. CLIFTON EDGAR presented a set of

SPIRAL CERVICAL DILATORS AND A SERRATED CURET

received from a French instrument maker.

First, a set of spiral cervical dilators of various sizes, that he had found of advantage in maintaining drainage in endometritis and septic cases. These advantages consisted in their ease of introduction, and in not readily becoming obstructed by the discharges.

Second, a large, semi-sharp puerperal curet, its advantages being the broad expanse permitting of rapid removal of a retained adherent placenta.

Third, the same curet as the foregoing, but with very fine serrations upon the edge to facilitate the separation of firmly adherent particles of placenta. This last Dr. Edgar presented with a word of caution as to general use.

DR. CRAGIN.—It is the old story. . . It depends upon the man behind the gun. A skilled operator like Dr. Edgar can use an instrument like that with advantage and little or no harm, because he knows when and where to stop. On the other hand, I should hesitate very much to put it into the hands of the general practitioner, who might not appreciate that he could remove uterine tissue as long as he scraped. In any but skilled hands it would be a dangerous instrument for use in a pregnant uterus.

DR. ROBERT L. FRANK presented two specimens. The first a case of

CARCINOMA OF THE BODY OF THE UTERUS, BOTH ADENOCARCINOMA AND SQUAMOUS-CELLED (METAPLASIA).

The uterus was obtained by vaginal hysterectomy, performed by Dr. Brettauer, who kindly placed the specimen at my disposal. The patient had entered the menopause four years before, and recently began to bleed. Macroscopically the growth shows nothing unusual. It consists of a somewhat pedunculated mass, the size of a pigeon's egg, situated at the fundus about midway between the tubal openings.

Microscopically, however, the tumor is most unusual. Carcinoma of the body, with few exceptions, is adenomatous in type, and is even to-day called "malignant adenoma" by some pathologists. A few cases of primary squamous-celled carcinoma (not due to metastases or extension of cervix carcinoma) are on record. Kaufman has also reported a combination of adeno- and squamous-celled carcinoma.

The specimen I show you, on cursory examination, seems similar to Kaufman's case. On more careful examination, however, I have concluded that the adenocarcinoma which is typical has merely undergone extreme metaplasia, that is, that its cells have changed from the type of cylindrical epithelium to true squamous cells. The reason for thus interpreting the picture is as follows. Direct transition from the cylindrical epithelium into squamous cells constantly occur, the squamous cells in some instances still lining the glandular spaces. If we regard the surface only we appear to be dealing with a simple solid epithelioma. The squamous cells are cornified, but do not form "pearls." In no spot do the squamous cells erode the musculature. They are limited to the surface, and probably are due to some change in nutrition. As the uterine mucous membrane, in parts free from the growth, shows no epithelization, we are not justified in regarding the squamous cells as a senile change, present before the tumor was formed, and then accidentally involved by the growth.

The second case, obtained at operation by DR. BRETTAUER,
A CASE OF PSEUDOMYXOMA OF THE PERITONEUM, ARISING FROM
THE APPENDIX VERMIFORMIS.

The patient, who was at the end of her third decade, was operated upon for prolapsus uteri. She had also shown symptoms referable to the appendix or right adnexa. A slightly increased resistance was felt on the right side.

The abdominal contents were exposed through a median incision. The pelvic organs were inspected and found normal. The cecal region was almost completely shut off from the remainder of the peritoneal cavity by filamentous adhesions. After these had been broken down the vermiform appendix was found lying in the right iliac fossa, over the psoas muscle, but raised from the posterior abdominal wall by a cushion composed of glistening, mucoid material with irregular bossy surface. The mass resembled a collection of frog's spawn, this expression being borrowed from Neuman's description of a similar case. The appendix and mass were removed *in toto*.

The appendix was not dilated, and showed no rupture and no hernia of its mucosa. Near the tip microscopical examination disclosed marked increase of the goblet cells in size and number. The mucoid mass consisted of pseudomucinous material in which were scattered single or aggregated columnar cells in great number.

As neither the ovaries or such parts of the gastrointestinal

tract as could be palpated during operation disclosed any tumor, it seems justified in classing this case as a primary pseudomxoma of the peritoneum, arising from the appendix. A few similar cases are on record. The intimate relationship of the mass and of the appendix further strengthens this interpretation.

The prognosis is uncertain. In some instances removal of the primary cause and as nearly complete removal of the mucoid mass as was possible has resulted in permanent cure. Other cases have recurred, but have been cured by repeated operation, while some ultimately died from progressive involvement of the entire peritoneal surface.

DR. S. M. BRICKNER presented the history of a case of
PRERETINAL (SUBHYALOID) HEMORRHAGE DUE TO VOMITING OF
PREGNANCY.

Mrs. A. G., referred to me May 29, 1909, by Dr. E. Gruening, was thirty-eight years of age, born in Hungary, and married twenty years. First menstruation at twelve years, always regular, every twenty-eight days, painless, lasting from three to four days. Last menses, February 22, 1909, as usual in every respect. During the month of March, the patient spotted intermittently, but had no pain. She has had seven children, all labors being normal except the last two which were instrumental. She had one abortion, eighteen years ago. Her last child, born three years ago, was born dead, having been in transverse position.

Six weeks ago (*i.e.*, about April 16) while vomiting, the patient "burst a blood-vessel in her head," as she expressed it, and at once became entirely blind in her left eye. She consulted Dr. Gruening, and has improved to such an extent that she can now perceive light. The patient still vomits and complains of constant pain in the head.

Dr. Gruening communicated to me that he had found a preretinal hemorrhage, of the so-called subhyaloid variety, in the left eye. The right eye was normal. He sent the patient to me for the purpose of controlling the vomiting, if possible.

I found, on examination, a normal pregnancy of twelve to thirteen weeks, with a greatly relaxed vaginal outlet. A twenty-four-hour specimen of the urine, examined by Dr. S. Bookman, of the physiological chemistry department of Mt. Sinai Hospital, was negative in every respect. I prescribed powders of bismuth subnitrate, cerium oxalate, and sodium bicarbonate, and gave the patient hygienic directions for her conduct.

On June 9 she again reported to me. She was still vomiting freely, nights as well as in the daytime, was sleeping very poorly and looked haggard. The vomiting occurred immediately after the ingestion of food. She complained of headaches and of repeated epistaxis after her vomiting attacks. After a consultation with Dr. Gruening, we decided that the wisest course was to empty the uterus, not on account of the vomiting *per se*, but because the continued vomiting might cause another hemorrhage in the left eye, which might destroy the sight per-

manently. Dr. Gruening then had hopes of saving the then remaining sight.

From the history as given to me the hemorrhage was the direct result of vomiting, the vomiting being due to toxemia. The sudden blindness appeared immediately after an attack of vomiting.

I sent the patient into Mt. Sinai Hospital, where, after three ineffectual attempts at inducing abortion by packing, I emptied the uterus without anesthesia. Her recovery was without event and the vomiting stopped at once. In September, the patient visited me again, and I found her pelvic condition normal. At this time, her sight was very much improved but was not yet perfect.

This case is unique in two respects, in the causation of the hemorrhage by the vomiting, and in the nature of the hemorrhage, which Dr. Gruening assures me has not been previously recorded. A careful search of the obstetric literature by me has failed to disclose a case of this kind, although amaurosis during pregnancy due to toxic conditions is, as is well known, of frequent occurrence. A case of unilateral amaurosis, indeed, has been recorded by Reuter¹ without any retinal change and recurring in succeeding pregnancies. The neuroretinitis of pregnancy has occupied many writers, the latest being Woods,² but these cases are based upon albuminuria arising during gravidity, and are essentially and entirely different from the case under consideration. Dr. Gruening, who is present, has consented to give the ophthalmic picture of this unusual case.

DR. GRUENING.—This water-color shows the ophthalmoscopic appearance of the case of subhyaloid or preretinal hemorrhage in which Dr. Brickner advised induction of premature labor for fear that further hemorrhages might take place in the eye. The occurrence of this particular kind of hemorrhage is an attack of vomiting due to pregnancy is exceedingly rare. It is the only case that I ever observed, and in literature I have been able to find only one other case, described by E. Wiegmann, "Praeretinale Haemorrhagie bei einer Schwangeren," *Klinische Monatsblätter für Augenheilkunde*. In Wiegmann's patient the hemorrhage occurred in the seventh month of pregnancy. No premature labor was induced, and the patient recovered her sight after the birth of the child.

I have records of preretinal hemorrhages occurring under other conditions; in malaria, after typhoid fever, and also where no special cause could be assigned for their appearance. In most cases the blood disappears, the retina is not seriously damaged, and central vision is restored. Whether the induction of premature labor was indicated in Dr. Brickner's case is debatable from a medical point of view.

* Reuter, *Archiv f. Augenheilkunde*, 1909, lxiii, p. 180.

† Woods, *Jour. Ann. Med. Assn.*, 1908, li, p. 204.

The literature on amaurosis in pregnancy can be found in an article K. Himmelheber, *Münch. med. Woch.*, 1909.

DR. S. M. BRICKNER read a paper on
THE INFLUENCE OF PREGNANCY ON CHRONIC PROGRESSIVE
DEAFNESS.*

DISCUSSION.

DR. GRUENING.—Gentlemen, some thirty years ago Dr. Loring read a paper on the induction of premature labor to prevent the occurrence of blindness. At that time the subject was as new in regard to the preservation of sight as Dr. Brickner's proposition is now in regard to the preservation of hearing. In the text-books on otology there are vague references to observations on impairment of hearing during pregnancy. The most experienced writers, for instance Politzer, Schwartz, Urbantschitsch, mention such cases, but in doing so cite not personal observations, but those of other writers. One name in particular occurs in every text-book, that of Dr. Bean. I became interested in that author and found that he published his cases in 1888, in the *Buffalo Medical Journal*. They are as follows: A woman became deaf in her eighth pregnancy. She had five subsequent pregnancies, and at the expiration of the thirteenth she was pretty deaf. Two of her daughters were also multiparous and became hard of hearing in the course of their puerperia. From what particular disease of the ears these patients suffered is not stated. There is no doubt that there was an inherited predisposition to progressive deafness, a condition which is now known as otosclerosis.

The pathology of the disease is fairly well known. We have to deal with changes both in the sound-conducting and sound-perceiving apparatus. There is an osteoporosis of the labyrinthine capsule, and there are frequently osteophytic growths in the vicinity of the oval window, causing immobility of the stapes. This condition is generally complicated with very distressing tinnitus. As it is a subjective symptom we cannot know just how distressing it is. In this era of individualistic assertion a woman who wishes to have no children may find tinnitus intolerable, while another who is wishing and hoping to have a child may consider it a trifling annoyance. The diagnosis, however, does not depend entirely upon this subjective symptom; tuning-fork tests give important clues to the real condition.

The paper we have heard to-night suggests the induction of premature labor in cases of inherited otosclerosis, the symptoms of which become more manifest during pregnancy. The analogy with eye-conditions, where this practice has been sanctioned, is only apparent. The disease of the eye is secondary to kidney-trouble, which is a grave danger to life, and the induction of abortion in these cases is imperative to save the life of the mother. In regard to the ear it is not a question of saving life, but of

*See original article, page 983.

preserving a function which is already impaired, and will become more so progressively without regard to pregnancy.

DR. CRAGIN.—The subject of increasing, chronic deafness as an indication for the interruption of pregnancy is certainly an important one. The deafness, in the cases under my care, has increased during the pregnancy, but as I knew this was the tendency, even when not associated with pregnancy, I have not felt justified in emptying the uterus. We know that in certain cases this is a proper procedure, but knowing how frequently the profession is besought to terminate an undesired pregnancy, it seems to me this society should be very careful in stamping deafness as an excuse for this operation, and it should take the ground that it is a very exceptional indication for the interruption of pregnancy, and only after the advice of one or more competent aurists have been obtained.

I would simply call attention to the frequency of hemorrhages in different parts of the body in that form of toxemia of pregnancy in which the liver is the organ chiefly involved. We see hemorrhages from the mucosa of the alimentary canal, from the uterus, and into the skin and it seems strange that we do not meet with hemorrhages in the eye in this condition oftener than we do.

DR. FURNISS.—The thing that impressed me about this case was the absence of evidence of renal involvement as shown by the urinary examination.

Recently I saw a case that had labor induced on account of eclampsia. At the time and for a few days afterward there was albumen and casts in the urine, but eight days postpartum the examination of the urine was negative. At this time 6 mg. of phenolsulphonaphthalein was injected subcutaneously; it first appeared in the urine in fourteen minutes, and there was eliminated in the first hour 20.8 per cent., and in the second 8.6 per cent. A week later the same test. Delay eleven minutes, first hour 27.0 per cent., second hour 14.7 per cent. The normal for puerperal women is delay ten minutes, first hour 35.36 per cent., second hour 25.63 per cent. (Goldsborough and Ainley.) Here is a woman showing a urine that would be considered normal by the ordinary chemical and microscopical examination, presenting at the time of the first test a markedly deficient elimination, and at the second an elimination below the average, yet an improvement on the first.

Of late we have used this test in many cases, normal and abnormal, and in each instance it has given us a valuable indication of the condition of the kidney function. I think that this is going to prove the best of the functional tests we now have, and that in a short time in all well-conducted hospitals it will be used as a routine test in every renal case, both surgical and medical.

DR. HEALY.—I would like to report a case of mine which came under observation one year ago.

Patient was thirty-four years old, married six years, pregnant now for the first time.

She came to me in the early months of her pregnancy and called my attention to the fact that her hearing was much worse than it had been previous to her pregnancy.

She was referred to an otologist who reported complete deafness in the right ear and beginning deafness in the left ear.

She did not seem to grow worse during her pregnancy, that is my memory of the case. She went through her pregnancy satisfactorily and was delivered the first of November last.

Since that time I do not know whether there has been any change in the hearing, although I shall see that it is investigated.

DR. BRICKNER.—I am very thankful for the discussion. There is one point which apparently needs emphasis. I am far from advocating abortion for mere deafness as such; nothing is further from my mind. I am perfectly in accord with Dr. Cragin in urging the greatest caution in advising an abortion or in consenting to its performance. Let me quote once more from my paper: "Given a woman who is growing progressively more deaf as a result of a chronic disease of the ears, and whose aural condition is conclusively made worse by a supervening pregnancy, the therapeutic induction of abortion can be legitimately considered. But the obstetrician must not permit himself to be grossly misled or deceived. An abortion is to be decided upon only after a consultation and, if possible, by an aural examination by the same aurist who has previously tested the patient's hearing." This is the attitude which I have assumed and I desire to be foremost in hedging about the induction of abortion with every caution and precaution. For example, the patient whom I have designated as Case I is again pregnant, and within a few weeks I have refused to interrupt the pregnancy, because I feel convinced that she is doomed to total deafness anyway.

Dr. Gruening's remarks have interested me intensely. I want to say in reply, that if, as Dr. Loring is quoted by him as saying, that "eyesight is life," so may hearing be. I am not advocating abortion in these cases to save hearing, but to preserve that much of auditory function which is still present; and this can be accomplished as the narration of my cases shows.

Dr. Whiting's broad review of the subject has given an impetus to my own thesis, although he has refrained from touching upon the obstetric treatment of the condition. No doubt, the tinnitus can be of greater harm to the patient than the mere reduction of hearing; in fact, the sleeplessness caused by it and the incessant buzzing have most pernicious influence upon the patient's nervous system.

In conclusion, I realize that this is an essentially new theme which I have presented to you. We are confronted with a serious problem in the handling of patients of this character. We must decide whether the preservation of the function of hearing is worth the interruption of pregnancy. I believe that in time we will come to recognize the advisability and propriety of this procedure.

DR. J. CLIFTON EDGAR* read a paper on

THE INFLUENCE OF THE AUTOMOBILE ON OBSTETRIC AND
GYNECOLOGIC CONDITIONS.*

DISCUSSION.

DR. BRODHEAD.—I think Dr. Edgar's paper is most conservative. The result of automobiling, as far as pregnancy is concerned, depends not only upon the nervous temperament of the individual, but also on the speed and distance traveled in the automobile. We all agree with Dr. Edgar that excessive automobiling is very harmful, and we see the results of it every day.

I see no reason why a woman who is pregnant may not go out under the conditions mentioned by Dr. Edgar, the speed not to exceed 15 miles an hour, the chauffeur to drive carefully, and the distance not to exceed 20 to 30 miles.

Accidents will occasionally follow automobiling, but they occur also under many other conditions. A woman who has been out for a walk may begin to flow and finally have a miscarriage; but that is no reason why the average patient should not take exercise in that way. The patient's physical condition is a most important factor.

When I am sitting alongside of a man running a car, I am continually on the lookout for dangers, but when I am driving myself I do not worry about them.

A good deal depends, as has been said, upon the nervous temperament of the individual, for in spite of a low rate of speed and short distance traveled some patients become fatigued and are obliged to give it up.

DR. DICKINSON.—Dr. Edgar has given considerable study to this subject; nevertheless I am impressed by the number of interruptions of pregnancy that are caused by automobiling. Dr. Edgar probably has better control over his patients than most of us. With my people, the chauffeurs cannot be restrained. I can do something with the control of corsets, but I cannot do anything with the control of gasoline.

I believe with the doctor that there are a good many patients who get benefit from the car, among the flabby and housed women who need oxygenation and would get it in no other way.

DR. EDGAR.—In my paper I compared the fatigue of traveling by railroad and automobile. There are extreme views on the use of the automobile during pregnancy.

An obstetrician with a large practice told me this afternoon that he did not permit these cases of pregnancy to use the automobile for touring purposes at all during pregnancy.

*See original article page 995.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Meeting, of March 23, 1911.

HENRY DAWSON FURNISS, M. D., *in the Chair.*

STEREOPTICON DEMONSTRATION OF COLORED MICROPHOTOGRAPHIC SLIDES.

DR. FRANCES COHEN presented these slides, which were made by her in the laboratory of the Schauta Frauenklinik in Vienna under the supervision of the director of the laboratory, who had spent over a year in perfecting his process upon which he is still working. His method would be published in the journal connected with the clinic in the near future. This series was believed to be the first shown in this country in which the microscopic images of a specimen had been transferred, with an absolute reproduction of the staining, to a photographic plate. The use of the plate as a stereopticon slide resulted in the exact representation of the original coloring in the image on the sheet, and thus, by making it possible to demonstrate specimens to large classes at once, became a valuable adjunct to the teaching of pathology. A series of such slides could readily be made for the various clinics, illustrating their special histological and pathological subjects, and might be used to make clear to classes what formerly had to be shown entirely by the use of the microscope or by hand colored plates. Dr. Cohen, therefore, showed these slides to demonstrate the value of this method as an adjunct to the microscope in teaching histology and pathology.

VESICAL CALCULUS FOLLOWING PUBIOTOMY.

HOWARD CANNING TAYLOR presented this specimen. The woman from whom this calculus was removed entered one of the maternity hospitals in New York two years ago, when she was forty-one years of age, for her first confinement. On account of the disproportion between the size of the child and the maternal parts, a pubiotomy was done. In the delivery of the child, not by the pubiotomy itself, an opening was torn into the bladder. An attempt was made to close it at the time of the delivery, but without success. Subsequently four or five trials were necessary before the vesico-vaginal fistula was successfully closed. This was probably because of the proximity of the fistula to one of the ureteral orifices. The patient remained well until about six months before, entering Roosevelt Hospital with symptoms of

cystitis. She had a temperature of 102, the urine contained considerable pus and mucus and a large number of colon bacilli. After a week in bed with a fluid diet and urinary antiseptics, the temperature subsided. A cystoscopic examination showed the calculus movable at the base of the bladder.

The suprapubic route was selected for its removal on account of the trouble that was had with the previous vesicovaginal fistula. A Pfannenstiel incision was used and found to give good exposure to the bladder. The incision in the bladder was closed with catgut and the abdominal wound drained for forty-eight hours.

No permanent drainage of the bladder was used, but the patient was catheterized every four hours for the first forty-eight hours.

There are three possible origins of the calculus. A small piece of bone from the pubiotomy may have found its way into the bladder and acted as a nucleus. A piece of ligature or suture from one of the operations for the vesicovaginal fistula may have been the nucleus. Some of the urinary salts that were deposited about the edges of the vesicovaginal opening may have been left in the bladder and may have been the starting-point of the calculus. The last is the most probable.

The calculus is 4 cm. in length, 2 cm. in width, and weighs 12 gm.

A CASE OF INTRALIGAMENTOUS PREGNANCY AT TERM.

DR. ROSS MACPHERSON reported this case because of its extreme rarity. In fact, this was one out of three cases taken from a series of 75,000 cases at the Lying-in Hospital. The patient was twenty-one years old. She had had no miscarriages. On February 18, 1911, she apparently was at term. When seen she was believed to have a fibroid of the uterus. On palpation the parts were soft; there were no fetal heart sounds detected. There was a mass behind the uterus that did not contract. The fetus, however, was palpable and lying in the correct position. A vaginal examination was practically impossible. It was believed that this was a case of sacculization of the uterus. Under anesthesia the fingers readily dilated the cervix and a portion of the uterine cavity. A diagnosis was made of intraligamentous pregnancy. The abdomen was then opened and the diagnosis corroborated. A child weighing 3800 gm. was extracted. They thought they could remove the placenta without difficulty; in attempting to do so there occurred a tremendous hemorrhage which required packing to control. The patient, except for a phlebitis in the left leg, made an uneventful recovery.

DR. JOHN O. POLAK had seen one similar case and the interesting point that was drawn out was the means of controlling the hemorrhage. Another case he saw was with the late Dr. Skene some eighteen years ago; after being in attendance on the woman

all night there was no dilatation of the cervix; Dr. Skene was then called in and made a diagnosis of an intraligamentous pregnancy. The operation performed was very simple, but there was a very prolonged convalescence, and the placenta, which was left *in situ*, gave trouble. Dr. Polak had seen two other cases who were operated on by other men; in both of these cases the placenta was placed in such a position that it was impossible to ligate the vessels or control the blood supply. In Dr. Polak's case there was no one vessel but several vessels and the hemorrhage was fearful; the patient was exsanguinated; if she had not had a very good resisting power she would without doubt have died.

DR. WILLIAM S. STONE said he had had no cases of intraligamentous pregnancy, but that he had assisted at two operations for this condition and he had seen two others. Dr. Polak brought out a very important point and one especially related to the diagnosis of intraligamentous pregnancy before operation. He thought that it was a guess, after all.

DR. POLAK answered that it was.

DR. STONE said that after making a diagnosis of extrauterine pregnancy the uterus would be found to be well forward and behind the symphysis; it could not be anywhere else.

DR. SIMON MARX had seen one such case. The patient went to the fourteenth month and then, and not till then, did they find an abdominal pregnancy or an abnormal position of the fetus. Operation was performed and old blood clots were found.

DR. ROBERT L. DICKINSON had seen two such cases and both were treated by the slow method. In one case where packing was employed there was a long and distressing period; the placenta came away piecemeal.

DR. A. ERNEST GALLANT had seen two cases of intraligamentous pregnancy at term, one with Dr. Marx and one with Dr. Coe. One case was packed and the suppuration was terrible. In one case there was a dead fetus at the eleventh month which was removed as well as the placenta. The edges of the opening in the vagina were turned in and sutured and this gave no trouble whatever; he practically closed over with peritoneum the opening in the vagina. If such a procedure could be resorted to it would be, in his opinion, far superior to the other method with its prolonged convalescence.

DR. JOHN O. POLAK discussing Dr. Gallant's case of a dead fetus at the eleventh month, said that he gained from the literature that in these over-time dead fetuses the placenta could be removed without these terrific hemorrhages. In the case he reported it was not possible to remove the placenta without much hemorrhage.

URETERAL CALCULUS.

DR. MADGE C. L. MCGUINNESS reported the history of a case that extended over a period of twelve years. The woman had painful attacks on the right side. Every six months she would

have these paroxysms of vomiting which lasted for twenty-four hours. For four years she paid but little attention to it, for the attacks came on so seldom. Finally the attacks became so bad she consulted several physicians, and they made diagnoses of lumbago, rheumatism, and other things. For two years no diagnosis was made. Her paroxysms of retching and vomiting increased in frequency and severity so that during the past few weeks they have come on every six days and lasted forty-eight hours each time. She thought that possibly there was a stone in the pelvis of the kidney or ureter. Dr. Furniss was asked to cystoscope her, which he did, and her diagnosis was substantiated.

DR. HENRY DAWSON FURNISS presented the radiograph which was taken by Dr. Jaches; a shadow was shown below the stilet. When he first saw the patient he thought the stone was situated in the lower end of the ureter, causing obstruction. He recently had had two cases with exactly the same symptoms, except in one case there was pus in the urine. In one case there was no urine from one side because the kidney was destroyed; but the other case gave a history exactly like the one obtained in Dr. McGuinness's case. He passed a catheter to the pelvis of the kidney and had the radiograph taken. In both cases the diagnosis was verified by operation and stones obtained from both. In one patient at the lower pole of the kidney were noted aberrant bloodvessels apparently arising from the aorta. The kidney was distended and the ureter was very small. The kidney was cystic as well. In this patient the attacks occurred every six days. They would come on after exertion. These paroxysms seemed to come on when the ureter tightened upon the stone. These attacks occurred with nearly equal intervals.

INCONTINENCE OF URINE IN WOMEN.

DR. HOWARD CANNING TAYLOR read this paper.

Under the heading of incontinence he included not only absolute incontinence in patients who had no control at all over the urine, but also cases that had such imperfect control that they leak or dribble urine. The incontinence might be absolute, or, more frequently, the patient had control except at times of special exertion such as coughing or sneezing, riding in an automobile over rough roads, etc. Dr. Taylor considered the anatomy of the bladder and called especial attention to two points regarding the ligamentary attachments. First, it was attached in front and above to the posterior surface of the symphysis pubis, a structure that was firm and unyielding and practically never became displaced; secondly, that it was attached below to the anterior surface of the vagina, a structure that was yielding and that was frequently displaced. The neck of the bladder was surrounded by tissues that yielded easily and therefore became dilated easily. Dr. Taylor then compared the differences in the anatomy in the male and female to show why inconti-

nence of urine occurred much more frequently in the latter than in the former.

Incontinence of urine was due to the imperfect action of the sphincter vesicæ; this in turn might be due to a weakened condition from overstretching; it might be due to a loss of tissue; it might be due to a dragging on the neck of the bladder which prevented the sphincter closing tightly. Incontinence of urine from over stretching of the sphincter from any cause was relatively an infrequent cause of incontinence. Loss of tissue might be caused by the pressure of the head during confinement, or by pressure from the improper use of the forceps. He thought however, that the temporary incontinence was more probably due to the swelling and edema which followed the confinement and prevented the sphincter closing tightly and controlling the urine, or to the dragging and pulling on the neck of the bladder itself. The most frequent cause of the incontinence of urine was the dragging on the neck of the bladder itself. As pointed out, in the female they had the urethra and bladder attached above to the firm os pubis and below to the yielding vaginal wall. Anything that dragged on this vaginal wall also dragged on the neck of the bladder and prevented the sphincter from doing its work. The amount of dragging necessary to prevent proper control was very small. The frequency of the cases of incontinence of urine was much greater than was usually supposed. These patients have no pain when they pass urine voluntarily and they have no increase in frequency and, unless they are asked about their power of control, say nothing about it.

A number of operations have been suggested for this condition. Gersuny injected a solution of paraffin about the neck of the bladder and urethra, a method endorsed by Kelly of Baltimore. This method did not appeal to Dr. Taylor; he was prejudiced against placing unabsorbable material into the tissues. Various operations had been done on the whole or greater part of the urethra. Various operations had been done in displacing the urethra forward. Dudley in 1905 freed the urethra and advanced it so that the meatus was near the clitoris. He reported four cases with complete cure and another done so recently that the result was still undecided. It had been suggested to cut down upon the sphincter vesicæ and resect it; he would hesitate to make the attempt.

Dr. Taylor's own plan in each of the three classes of cases was practically as follows: 1. If the incontinence were due to overstretching, and seemed to be permanent and demand operation, he would denude the anterior vaginal wall in the vicinity of the neck of the bladder and resuture it with the expectation of so puckering the urethra that the sphincter would have a better chance to act. 2. If the incontinence were due to a definite loss of tissue the procedure would be much the same, but he would be very much more guarded in his prognosis. 3. If the incontinence were due to traction on

the neck of the bladder, the problem was to remove the traction. This might be due to a tumor in the abdomen, more or less prolapse of the uterus and vaginal walls, etc. Whatever operation was done for the prolapse of the uterus, the bladder should be freed from the anterior vaginal wall and pushed higher up on the uterus so that the drawing on the sphincter would be removed. This, associated with some method of suspension of the uterus and perineorrhaphy would usually cure the patient. Histories of three cases were given to illustrate the condition and the results of the different lines of treatment.

DR. ROBERT L. DICKINSON said that the nerve supply to the base of the bladder was a most interesting matter. A badly eroded cervix required prompt attention. These patients should be looked over systematically. One should look for urethritis. Particularly should they look for a sagging when the patient stood. A patient with corsets on will show residual urine when standing, but not when she was on her back on the table. Dr. Reynolds told him that he could cure these chronic cases by correcting their posture. The slumping woman, the one with the gorilla attitude, he could cure by making her assume the military attitude. It was not very uncommon to find varicosities at the base of the bladder. Many of these patients could be relieved by the employment of pessaries. Electrical treatment was of benefit, but much resulted from the massage. Good resulted also not so much in the employment of washings but from the massage of the bladder. He had tried the use of paraffin, but there was danger of its getting into the circulation. In four instances he advanced the urethra; in two cases there was persistent incontinence and these patients were completely cured for three months, when the original cause of the incontinence returned and they again suffered from this trouble. Raising the bladder was an important thing; it readjusted the circulation and did away with the residual urine.

DR. WILLIAM S. STONE said that it seemed to him that the situation was worse than they had been led to believe from the discussion. After going over everything they were taught to search for, there yet remained a large number of cases in which they were unable to give any definite reason why every time the patient laughed or sneezed her urine came away. This condition of incontinence of urine in women existed to a greater extent than they appreciated. Dr. Stone said he had sat with fear and trembling when listening to the history of a patient, fearful that she might complain of this symptom. After all, the discussion had brought out the fact that there remained a large number of cases that they were unable to determine the cause even after a very careful examination. Dr. Dickinson brought out a very important point with regard to examining the woman in the erect position. A tight corset might be a factor in changing the position and the relation of the parts. This might be a very important contributing factor.

Frequently they ran across cases of women who gave no previous history of any chronic inflammation and who had not given birth to children, and mostly in women who were approaching the age of forty years. There seemed to be some relation in the decrease in muscular power and the amount of muscular tissue; in these cases there was an increase in the fibrous connective tissue. Analogous to these cases of incontinence of urine in women was the bleedings that occurred from the uterus when they were unable to ascribe any definite cause for the same, even after the most painstaking and careful examination. The loss of the normal relationship between the fibres of the muscular tissue, plus the neurotic element, resulted in a poor general muscular condition. Fluidextract of hydrastis had been used at Roosevelt Hospital in these cases with some benefit.

DR. GEORGE H. BALLERAY called attention to the importance of being sure of the cause of incontinence of urine in women. One case he recalled was treated by a distinguished medical man and without success. He found that she was suffering from a vesicovaginal fistula through which could be passed a 16 Fr. sound. This woman had been treated by medication. Another case he recalled was that of a woman who, whenever she sneezed, coughed, or laughed, passed her urine. The last physician she consulted invented an apparatus for washing out her bladder. Not one of the men she consulted made a complete examination of her bladder. Finally, a true diagnosis was made and three large calculi were removed, one of them being 3 inches in diameter. Dr. Balleray wished to emphasize the importance of being sure of the diagnosis in every case.

DR. SIMON MARX said that a very important topic for discussion was the cause of retention of urine, and he reported the case of an hysterical girl, fourteen years of age. No one seemed to know just what the cause was. She was sent to the hospital for observation. At last she was anesthetized and four quarts of urine were withdrawn. This was the result of spasm of the urethra. This young girl was cured by dilating the urethra and introducing a permanent catheter which was left in for six days. Her incontinence disappeared. Dr. Marx believed in examining these patients in the upright position.

DR. FURNISS reported three cases of vesicovaginal fistula, two following an hysterectomy, the other a rectal carcinoma. The leakage of urine was not always constant. The urine would accumulate in the bladder and then, under some sudden strain, would slip away. In cases of tabes there were many ureteral disturbances; in some cases one may almost make a diagnosis of tabes from the urinary disturbances alone.

ACUTE STEPTOCOCCUS AND COLON BACILLUS HEMATOGENOUS
INFECTION OF THE KIDNEY.

DR. HENRY DAWSON FURNISS reported this case. Mrs. E. B., New York City, thirty-seven years old, mother of one child

seventeen years old. No abortions. Had a perineorrhaphy two years ago. January 10, 1910, while in theater had severe chill, followed by temperature, and some pain in left kidney region. First diagnosed as typhoid, but later as an infection of the kidney. Was ill about four weeks with this. Radiographs were taken and a shadow in the pelvic portion of the right ureter was found. After this attack she had more or less bladder disturbance with some pus in the urine. On January 10 of this year she had grip. Seen on January 28, when she was suffering with pain in pelvic region due to chronic tubal trouble. On February 1, ureteral catheters were passed without meeting any obstruction. At this time there was a profuse flow of light colored urine from each kidney, containing no pus. February 4 radiographs were made with an x-ray catheter in the right ureter, and it was found that the shadow before observed was out of the course of the ureter. That night the patient had a chill, temperature went to 101° , and there was marked pain in the right renal region. From then on she had several chills with temperature from normal to 105° for four days. After that the temperature ran 102 to 104° , but there were no more chills. Pus was found in the urine. Culture of urine showed organism resembling colon bacillus. Antogenous vaccines were made and used with no effect. The blood count showed a moderate leukocytosis, but the differential count was not high. On February 14 the right renal pelvis was irrigated with nitrate of silver, but this had not the least effect upon the course of the trouble.

February 19 the temperature rose to 104° , and the blood count showed 20,000 whites, and 80 per cent. polymorphonuclears. At no time did the pulse go over 106 and it was always of good quality. From the start of the disease the patient was much of the time irrational, and on occasions delirious. February 21 under gas oxygen anesthesia, after giving a preliminary intravenous saline infusion of normal saline, a nephrotomy was done. The kidney was much enlarged and congested, with a very adherent capsule. The patient's condition did not improve, so on February 23, under gas oxygen anesthesia, the kidney was removed, after first catheterizing the left ureter. Urine from the left side showed a small amount of pus. After this the patient made a good recovery, though the first few days were rather stormy.

Upon examination the kidney was found much enlarged, the capsule thickened and very adherent. After removing the capsule numerous hemorrhagic spots were seen. In only one spot was pus found. The cultures made from the kidney showed growths of the streptococcus and colon bacillus.

CRIMINAL ABORTION FROM THE PRACTITIONER'S VIEWPOINT.

DR. WALTER B. JENNINGS read this paper.

He discussed the advisability of a physician's responding to a call after a criminal abortion has been produced and called attention to the great risks that he incurred in case he responded.

He quoted from section 1, Chapter 1, on the Principles of Medical Ethics, which says: "Physicians should not only be ever ready to obey calls of the sick and injured, but should be mindful of the high character of their mission and of the responsibilities they must incur in the discharge of their momentous duties. In their ministrations they should never forget that the comfort, health, and lives of those entrusted to their care depends upon skill, attention, and fidelity." Although no other profession was as precarious as the practice of medicine and even though the physician risked much, if he was in the right he should go ahead where duty called and fear nothing. The first introduction of the physician to a case of criminal abortion was usually in the second stage when dangerous complications and consequences were developing. The attending physician would, of course, ask for a vaginal examination. The woman's consent was indispensable to this, as no one was obliged to give evidence against herself; any attempt to make an examination without permission was, under the law, an assault. The physician should avoid the manners and methods of the detective and endeavor to gain the woman's full confidence by gentleness and tact. In 1889 Massachusetts passed a statute to the effect that the dying statement of the victim of an abortion would be valid evidence, having the force of a sworn deposition. It had been the author's custom during ten or twelve years of practice, when called to a case of this nature, to prepare the patient and the instruments for a curettage. The assistant or associate was present to administer the anesthetic and the nurse or some intelligent member of the patient's household was present to act as second assistant. The patient's history was carefully taken and written down, after which the patient made a written statement to the effect that she was so many months pregnant and that she went to a certain Mrs. —, address if possible, a midwife, who for a certain sum of money produced the abortion or inserted a certain instrument, with the idea of bringing on a miscarriage, and that after thirty-six or forty-eight hours such a miscarriage took place, the patient having chills and fever and great loss of blood. Dr. X was called in to attend her, but he was not responsible for her present condition in any way whatsoever. The patient being of sound mind then signs the written statement, which is also signed by the physician and one or two other members of the patient's household. The psychological effect of the note upon the patient and other members of the family was not only remarkable but astonishing. It was also explained to those present that this class of cases was a very undesirable one to treat, that medicolegal complications might develop, that the physician had accepted the case as one of professional duty, much against his personal feelings, and without this statement he might be held responsible for the crime. Without it, he also might be indicted and certainly would suffer much inconvenience, notoriety, and personal injury. Before a court of

law oral and implied evidence were of little account, but written evidence would be considered. In case the patient recovered this written evidence could be destroyed. The author had never lost such a case, but if he had a patient about to die he thought that he would notify the coroner or coroner's physician, so that an antemortem statement could be taken. Dr. Jennings recalled the arrest several years ago of two reputable physicians, because they were the last who attended the deceased prior to her being sent to the hospital, and on that the arrest was made. (This last being the testimony of the Captain of Police.) Under the law any physician might be arrested without a warrant being served upon him, might be arrested on the most flimsy of pretexts; yet it appeared that the abortionists might advertise in the papers, might send circulars to physicians, asking and offering inducements for cases of abortion, and they might grow fat on their ill-gotten gains without molestation by the police, while a reputable physician, who was called in to save a woman's life, was told that if he dared do it alone he did it at his peril. The writer held that a physician should go where called and that in these cases by having a written statement from the patient he was legally protected and the mental effect upon the patient and her family was good. From the practitioner's standpoint it was not desirable nor advisable to send such patients to the hospitals. It seemed to the writer that until the coroner's office was abolished and the system known as the medical examiner substituted, as had been done in the State of Massachusetts, these indignities would still persist.

DR. JOHN O. POLAK said that in New York City it was very difficult for the doctor to escape the coroner's office and the District Attorney's office, especially in those cases of abortion that happened outside of public institutions. There were two points in particular that Dr. Polak wished to bring out in regard to criminal abortion. The first physician who was called to such a case has one duty, and that duty was to tell the patient that he considered such cases septic *per se*; they were all septic abortions. The law had little to do with them and you could protect yourselves if you would at once call in counsel; if counsel was called in then they would have little or no difficulty. In the moribund cases the coroner's office should be notified. The second point Dr. Polak wished to bring out was that they, as physicians, could not be used as witnesses against these patients.

With regard to the catheters used, a number of patients were brought to them in their hospital work, on whom the hard rubber catheter had been used. Most men, however, preferred the soft rubber catheters. Some men use one catheter two or three times. An interesting case he reported that occurred three or four weeks ago. A patient had metrorrhagia. After he had examined her several times he noticed a string hanging from the

uterus; he brought out of that uterus a catheter which had coiled up inside that organ.

The two special points that Dr. Polak wished to emphasize were, first, the duty of the physician to such patients and, secondly, that all these cases should be considered septic and treated as cases of septic abortion.

DR. SIMON MARX condemned the unscrupulous coroner's system; it was composed of political hirelings. He told of an unfortunate experience in which he was called in consultation at midnight. When it was seen that there was to be a fatal outcome, the two doctors ran away. Dr. Marx was arrested, taken to the police station, and kept there till he could get bail which was in the morning. However, Dr. Marx said he did not care a rap what case he was called to, he would never send a case to the coroner's office. Treat the woman, treat her as she should be treated, treat her along ordinary lines. If she died, report the death to the coroner. Every such patient with the least fever should have her uterus emptied.

DR. ROSS MACPHERSON said that the coroner's office paid no attention to these cases; as many as 300 or 400 cases a year were reported to that office. As one coroner said to him, "What's the use of our seeing such cases? They all get off." The giving of too much information in these cases was a mistake.

DR. JOHN O. POLAK said he had been called as a witness eight times; in all these cases the women had died of septic peritonitis and the men were arrested. Not one was convicted. One of these patients died of septic peritonitis; the abdomen was drained of several gallons of pus. The party who did the operation was arrested and brought to the coroner's court. The questions of the coroner interested Dr. Polak; they themselves feel how hopeless it is to attempt to convict these people. Such questions as these were asked: "Can you state positively that death was due to the abortion? Could it not have been due to a perforated appendix?" etc. Coroners, as a rule, did not bother with these cases.

DR. GEO. W. KOSMAK said that the subject of Dr. Jennings' paper might always be regarded as appropriate and timely. Many of those present had probably gone through experiences of this kind and could therefore sympathize with what the writer had stated. Dr. Kosmak was glad to learn that the authorities in Brooklyn were more lenient in these abortion cases than those in New York. He had found that whenever a case of this kind occurred in the practice of a reputable practitioner, the coroner's office and the District Attorney's office got busy at very short notice, while if such a case was brought to a public hospital after having been participated in by a midwife, very little was done by these otherwish over-zealous officials. Dr. Kosmak said that he was unfortunate enough two years ago to have been indirectly concerned in a case of septic abortion at a prominent private sanatorium. The patient was curetted in order to stop the

bleeding and clear out the remnants of an incomplete abortion. She was evidently septic before coming under the care of the doctor's associate on the case and the previous history was doubtful, the patient claiming that she aborted as the result of a fall. The woman died after a most virulent general peritonitis, and the death certificate was duly signed and the cause of the death truthfully stated. The certificate was not accepted by the Department of Health, the coroner's office was immediately notified, and within a very few hours the District Attorney was on the trail of the physicians as well as on that of the sanatorium authorities. The head of the latter only escaped immediate arrest and imprisonment through the good offices of her legal adviser. On learning of this, Dr. Kosmak on the following day presented himself to the coroner and, together with the nurses and all those who had anything to do with the case, was subjected to a most extensive and exasperating questioning. The District Attorney's representative seemed to take it for granted that the mere word "curettage" signified a criminal abortion, and that its performance immediately put the operator in a position which was in conflict with the law on the subject. Some two months later the inquest was held and, notwithstanding the false testimony introduced by the police officers and the most unscientific report of an autopsy by one of the coroner's physicians, the jury exonerated all those whose names had been connected with the affair. A marked contrast was shown in the amount of energy expended to annoy and insult those who were legitimately connected with the case and in the effort to find out those who originally induced the abortion, if this was actually done. Notwithstanding this disagreeable personal experience, Dr. Kosmak felt that the physician's first duty in a case of this kind was toward the patient and that it was not his affair how the process had been started.

DR. HENRY DAWSON FURNISS told of an instance in which a woman asked him to produce an abortion on her and he absolutely refused. Some one else did it and she died in Roosevelt Hospital. In her antemortem statement she said that Dr. Furniss did it. That was the only case he had any experience with.

REVIEWS.

A TEXT-BOOK OF GYNECOLOGICAL SURGERY. BY COMYNS BERKELEY, M. A., M. D., B. C. CANTAB, F. R. C. P. (London,) M. R. C. S. Eng. Gynecologist and Obstetrician to the Middlesex Hospital, Senior Physician to the City of London, Lying-in-Hospital, Surgeon to In-Patients at the Chelsea Hospital for Women; and VICTOR BONNEY M. S., M. D., B. Sc. Lond., F. R. C. S. Eng., M. R. C. P. Lond. Assistant Gynecologist and Assistant Obstetrician to the Middlesex Hospital. Senior Surgeon to Out-patients at the Chelsea Hospital for Women, Gynecologist to the Hospital for Epilepsy and Nervous Diseases, Maida Vale. Octavo, 720 pages. With 392 black and white illustrations and 16 colored plates. New York: Funk and Wagnalls Company, 1911.

This very admirable book is purely a mirror of its authors' operative methods as developed at the Middlesex and Chelsea Hospitals for Women. It gives in detail the indications for gynecological operations the preoperative preparation the operative technic, the post operative treatment, the dangers to be avoided, complications and their treatment. The successive steps of all the more important operations are pictured by the exceedingly clear and helpful line drawings of Doctor Bonney. The text is a model of clear, direct statement which never wanders from its purpose and from which every unnecessary word has been cut. Its teaching is practical and safe, with much to praise and little to criticise. The chapter in the book most open to criticism seems to be that describing the operations for cystocele and for posterior colpocele and the repair of lacerated perineum. The authors operation for ventral suspension might more properly be called a firm ventral fixation for the anterior uterine wall.

The book will be read with pleasure and benefit by every gynecologist who is progressive enough to agree with Dr. Berkeley "that until the day of his retirement he should take every opportunity to improve his technic, for he may rest assured that he will never be perfect, and that there is some good lesson to be learned from seeing the work of any operator, even if it be only what to avoid."

MANUAL OF DISEASES OF WOMEN. BY W. E. FOTHERGILL, M. A., B. Sc., M. D., Assistant Gynecological Surgeon, Royal Infirmary and the St. Mary's Hospitals, Manchester; Clinical Lecturer on Obstetrics and Gynecology in the Victoria University of Manchester. Octavo, 433 pages, with 144 illustrations in the text. New York, 1910, Wm. Wood & Co. Price, \$3.00 net.

This manual has diverged from the stereotyped methods of books in this class, and is refreshingly original. The subject-matter is divided into diagnosis of gynecological cases, errors of development (congenital malformations, developmental errors of puberty), circulatory changes, mechanical conditions and injuries, results of infection, progressive conditions (overgrowth and newgrowth), retrogressive conditions (menopause, superinvolution), and management of gynecological conditions.

Just as the classification, as indicated above, is based upon solid pathological knowledge, the treatment of individual topics is equally well carried out. The result is a very readable and instructive little volume worth recommending to the student not only because he will gain knowledge from perusal of its pages, but also because he may learn to recognize that theory and practice, if well balanced, are not incompatible, even in an elementary book.

R. T. F.

DIE BEHANDLUNG DER FRAUENKRANKHEITEN. FUER DIE PRAXIS DARGESTELLT. Von DR. J. VEIT, O. O. Professor Direktor der Universitäts Frauenklinik in Halle a. S., Geh. Med. Rat. Octavo, 244 pages, with 39 illustrations, some in colors. Berlin, S. Karger, 1911. Price, 12 Marks.

The introduction is one of the most enjoyable portions of this instructive book. In it the author traces the evolution of gynecology from forty to fifty years ago, when all women's diseases were treated in the physician's office by means of scarification and tampons, through the era inaugurated by Emmets plastic operations, to the present day when adnexal disease occupies the foreground. Technically, says Veit, the surgeon is competent to perform every gynecological operation, and each gynecologist to do abdominal surgery. At present, however, the abandonment of the vaginal method of operating and the refusal to attempt conservative gynecological treatment would prove a misfortune for womankind. Therefore every complete hospital should possess a gynecological division in charge of a physician competent in abdominal surgery, but especially well equipped in gynecological diagnosis and conservative methods.

The text presupposes a good knowledge of gynecological diagnosis and pathology. In the general part of the book, equipment, methods employed in the office, and general operating technic are discussed. The special part deals with the entire field of gynecology including operative methods. In surprisingly small compass this wide field is adequately covered. In the treatment of endometritis intrauterine applications and irrigations appear to be the author's favorite remedies. Pessaries, on the other hand, though mentioned, are apparently almost discarded by Veit in favor of Alexander's operation or ventrofixation. His attitude toward lacerations of the vagina are equally radical. Theoretically this attitude is fully justified, but in practice it cannot always be enforced. The book as a

whole is excellent, and is to be commended for the sane and critical attitude assumed on all debatable questions, and the clearness with which indications for conservative *versu* operative measures are placed before the reader. R. T. F.

ATLAS OF MICROSCOPIC DIAGNOSIS IN GYNECOLOGY. With Preface and Explanatory Text. By DR. RUDOLF JOLLY, Chief Physician of the Gynecological Clinic, University of Berlin. Only Authorized English Translation by P. W. SHEDD, M. D., New York. With 52 lithographs in colors and two textual figures. Large Octavo, 192 pages. London, Rebman Limited. Price \$5.50.

This atlas contains colored illustrations of practically all the normal and pathological tissues which are obtained by curettage of the uterus or excisions from the cervix, accompanied by a short explanatory text. The author has been consistent, and limited his exposition to the indicated field; consequently he has been able to present a thorough guide to beginners, and a reference book to those who are thrown upon their own resources for the making of a diagnosis.

The atlas contains directions for the preparation of sections and description of the normal uterine mucosa. It then details the findings in endometritis, erosions of the cervix, menstruation, pregnancy, carcinoma of uterus, cervical polyp, vaginal growths, sarcoma of uterus, and concludes with catarrhal secretions. The plates are excellent, clear and well colored. Schematized just sufficiently for clearness and yet true to nature, they convey exactly what they should, and take the place of a set of microscopical sections for reference.

In the opinion of the reviewer, the illustrations labelled as "endometritis glandularis" might with equal truth have been called examples of normal endometrium. It is important, particularly for those not intimately acquainted with gynecological pathology, to realize from the outset that the normal endometrium can and does constantly undergo changes which have no pathological significance. If this fact is kept in mind many unnecessary and even harmful curettages will be avoided, or if curettage has been performed without the proper indication, the pathologist will no longer aid and abet this abuse by reporting endometritis glandular hypertrophica, etc., as heretofore.

The translation into English is woefully poor. The ponderous German construction crops out throughout, and many of the expressions are archaic and obsolete. Fortunately the author's ideas were so clearly formulated that even in the translation the sense and meaning has not been lost.

It is to be hoped that Jolly will extend the scope of the next edition, or prepare a second volume which will treat of the diseases of the tubes and ovaries. R. T. F.

AN INTRODUCTION TO DERMATOLOGY. BY NORMAN WALKER,

M. D., F. R. C. P. Physician for Diseases of the Skin at the Royal Infirmary, Edinburg. Fifth edition. 346 pages. With 43 colored plates and 79 illustrations in the text. Cloth, \$4.00.

There is more in this small volume than its modest title would seem to imply, for we know of no work on the subject of more value to the ordinary practitioner. It contains short, practical, and very clear descriptions of all the lesions of the skin that one is liable to meet, and is illustrated by a large number of very instructive, typical and beautifully executed plates. Its popularity is attested by the fact of five editions in 12 years.

FOOD AND THE PRINCIPLES OF DIATETICS. BY ROBERT HUTCHISON, M. D., Edin., F. R. C. P., Physician to the London Hospital; Physician with charge of Out-Patients to the Hospital for Sick Children, Great Ormond Street. Octavo, pages 615. With plates and diagrams. Third edition. New York: Wm. Wood & Co., 1911. Cloth \$3.00

This well known book describes minutely the nature, the nutritive constituents, and the relative values of various food substances; the amount of food required in health and under various conditions; the cooking of food; the digestion of food in health; the principles of feeding in infancy, in childhood, in disease; and has besides chapters on various "cures" and "systems" and on artificial and predigested foods and on artificial feeding.

COLLECTED PAPERS BY THE STAFF OF ST. MARY'S HOSPITAL, MAYO CLINIC Rochester, Minnesota, 1905-1909. With 668 pages and many illustrations. Philadelphia and London: W. B. Saunders Co., 1911.

This volume is an indexed collection of reprints of some sixty papers written by members of the Mayo staff and published during the last five years. The most notable are those on the surgery of the stomach and duodenum, on umbilical hernia, and on thyroidectomy.

LA OBSTETRICIA EU MEXICO. Notas Bibliograficas, Etnicas, Historicas, Documentarias y Criticas, de les origenes historicos hasta el año 1910. By DR. NICOLAS LEON. Octavo, 743 pages, illustrated. Mexico, 1910.

As shown in the title, this work covers the obstetrical history of Mexico from legendary times to the present day. A bibliography of more than 1000 articles occupies the first portion of the book. The second, takes up obstetrics as shown by Aztec tablets, Indian legends, etc. The midwifery of still surviving tribes, of the Spaniards and of the present-day Mexicans are recorded. Anyone interested in the general history of obstetrics will find matters of interest in these pages. R. T. F.

VAGINAL CELIOTOMY. BY S. WILLIS BANDLER, M. D., Adjunct Professor of Diseases of Women, New York Post-Gradu-

ate Medical School and Hospital. Octavo of 450 pages, with 148 illustrations. Philadelphia and London: W. B. Saunders Co., 1911. Cloth, \$5.00.

THIS book is remarkable mainly for its very full and clear series of semidiagrammatic illustrations which show in great detail the successive steps in the various vaginal operations which involve the opening of the peritoneal cavity. The teaching value of these illustrations is usually good. The text is clear, mainly descriptive, and supplementary to the illustrations. There is little to be criticised. The author's indications for the vaginal operation are well chosen and lean toward the conservative. The make-up and technical execution of the work is good. The text is printed in clear, large type on broad margined paper.

DIE BAKTERIOLOGISCHE UNTERSUCHUNG IM DIENSTE DER DIAGNOSTIK UND PROGNOSE DER PUERPERALEN INFEKTION. VON PROF. DR. M. ZANGEMEISTER. Pp. 30. Berlin, S. Karger, 1910.

The author bases his study on observations of 435 lying-in patients. The number of bacteriological examinations was 697. His methods are simple. He uses a culture tube and swab as for a diphtheria culture, taking the smear from the vagina. This suffices for all practical purposes. Blood agar is preferable as a medium and the streak-plate is used. The smears are taken intrapartum whenever fever is present. For routine purposes smears were taken twenty-four to forty-eight hours postpartum. The most dangerous organism is the hemolytic streptococcus; when found intrapartum and in large quantities the prognosis is almost invariably fatal. When the hemolytic streptococcus is found in the postpartum smear, the prognosis is less grave. The numerical quantity is of great importance. Even in mixed variety of cultures when streptococcus preponderates the prognosis should be guarded.

It is possible to prognosticate puerperal fever from an intrapartum smear. The author suggests therefore that to carry out prophylactic measures for the prevention of puerperal sepsis, the same steps should be taken by municipalities as are taken in diphtheria, typhoid fever, etc.

I. C. R.

FOUR EPOCHS OF LIFE. By ELIZABETH HAMILTON MUNCIE. Greaves Publishing Co., New York, 1911.

The book attempts to present the mysteries of creation and procreation and of the sexual part of the individual especially, in a way to arouse the mind of the child and the youth to a proper understanding of sex-life and ultimately to a cleaner and more physiological way of living. Copious examples from animal and plant life are drawn upon to afford the child the proper idea of the purpose and significance of mating. As the child grows older and approaches puberty, these analogies are converted into practical lessons.

Information in unvanishing terms regarding the physiology of the reproductive organs is given the adolescent youth and pubescent girl. Their proper relationship toward each other, the noble purpose of wedlock and its inevitable issue, the normal happiness that may be derived from a healthy, natural wedded life are pictured in clear terms. On the other hand, in contrast to these blessings of pure living, the numerous diseases and miseries attendant upon illicit intercourse are also forcibly dwelt upon. The evils of prostitution occupy a very important part of the author's message. In this she sounds the warning note of an ardent member of the American Society of Moral and Sanitary Prophylaxis.

I. C. R.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Determining Causes of Sex.—L. Dillon (*Jour. de méd. de Paris*, Jan. 28, 1911) puts forth the axiom that the stronger parent at the time of conception gives the sex to the child, and it will be of the opposite sex. The author thinks that by a study of embryology, physiology, and clinical facts this axiom can be mathematically demonstrated. The embryological study includes the fact that every living organism is composed of cells that multiply by division. The sexual cells develop from the canals of Pflüger. The developed ovule has no element of life in it; left alone it will die. The spermatozoon is equally insufficient alone, but the union of the two prevents death and opens up life. Half the non-viable sexual nuclei unite to form a complete daughter-cell, the normal result of karyokinesis. The ovule has no sex up to the time of the development of the genital organs. The two parts of the cell neutralize the sex up to a certain point, when one is in excess and determines the permanent sex of the product. According as this excess comes from father or mother is the sex determined. The spermatozoon has more power if it is newly formed and has not remained long in the seminal vesicles. With the ovule it is otherwise. We cannot now say at exactly what time in the menstrual cycle the ovule is detached from the ovary. In many women this appears to occur after menstruation. Clinically we find that any cause of enfeeblement of the people causes the production of many boys. War has this effect; illegitimacy diminishes the appearance of boys. The relative ages of the parents has an influence; when the father is younger than the mother there are more girls; if of the same age, more girls; if the father is six to eleven years older than the mother, there are more boys; the number of boys increases with age of

the father. Procreation during the postmenstrual period causes more boys. Whenever the male is inferior there is an excess of boys; when the male is superior, girls predominate.

Vaginal Cesarean Section in Eclampsia.—Oskar Goldberg (*Zent. f. Gyn.*, Dec. 24, 1911) says that there can be no doubt that the cause of eclampsia is a poison which exerts its baleful effect on the organism some time before the convulsions occur, causing increased blood-pressure, contraction of the vessels, changes in the brain, in the lungs, kidneys, and liver. Edema, headache, nausea, pain in the stomach, disturbances of sight, lessened kidney secretion, and albuminuria are all observed before any convulsions appear. It is only when the cerebral disturbances have reached a certain height that the clonic-tonic spasms occur. If the cause of the disturbances is not quickly eliminated death will ensue. In many cases the convulsion causes contractions of the uterus, and in some cases a rapid delivery occurs. If this takes place early enough the patient recovers, but if delivery has waited too long the patient goes on to coma and death or inflammation of the lungs. The contractions may cause new convulsions, and the efforts at expulsion take on a stormy character. The safety of the patient lies in delivery accomplished as rapidly as possible. The earlier delivery occurs the better is the prognosis. As to the best method of accomplishing speedy delivery, the author thinks that the vaginal Cesarean section is superior to Bossi's dilator with incisions, which are liable to cause tearing of the uterus into the peritoneal cavity. The vaginal section is less dangerous to the mother, and delivery is easy and safe for the child. This operation can be done in a private house with good assistants. The author gives histories of two cases delivered by this method, two of them resulting in recovery of the mother. The other patient was delivered after being in labor for some time. The eclamptic symptoms began a week before delivery; disturbances of sight and unconsciousness occurred three days earlier. Hyperemia of the lungs with retained secretions and food which had escaped into the trachea during the long period of unconsciousness caused inflammation of the lungs. The delivery stopped the convulsions, but the condition of the patient was hopeless even then.

The Cesarean Operation.—J. A. Doléris (*La gyn.*, Feb., 1911), considering the indications for the different forms of Cesarean section, discusses the literature of this subject, and gives the facts observed by him with reference to it. The technic of both the transperitoneal and extraperitoneal operations is carefully described. In conclusion he says that the classical operation is so simple and certain in its results that none of the later proposed operations can take its place. But it must be done only when the organs are aseptic. Adhesions and vicious cicatrices result from infection, hematoma, inter-utero-parietal hemorrhages, or defective technic. Repetitions of this operation on the same subject should not be done indefinitely. After the third one

sterilization is demanded. The various modifications of trans-peritoneal Cesarean section are more difficult, longer, and less certain, than the classical procedure. In septic cases the classical section has not given good results. Maternal mortality increases with delay and bad conditions. Hebosteotomy is better than hysterectomy, and safer than symphyseotomy and is preferable in infected cases. Its mortality is more favorable than that of the classical Cesarean operation. It is superior to the extra-peritoneal section, as is shown by the statistics of its mortality. Hebosteotomy should generally be restricted to multiparæ, but may be useful even in primiparæ.

Ocular troubles in the Course of Albuminuria of Pregnancy.—M. R. Burnier (*Gaz. des hôp.*, Feb. 14, 1911) distinguishes three kinds of ocular troubles that may occur with albuminuria of pregnancy; amaurosis, in which there is no change that can be detected by the ophthalmoscope, albuminuric retinitis, and optic neuritis. Amaurosis signifies a complete loss of vision that may occur suddenly or come on gradually. This condition is rarer than retinitis in such cases. It occurs more often in primiparæ, near the end of pregnancy, and before, during, or after delivery. It may not be associated with an eclamptic attack, but there is always albuminuria. It is generally preceded by some obscuration of vision and difficulty of accommodation. It is generally accompanied with nausea, vomiting, headache, and gastric troubles. The pupils are normal or a little dilated and react normally to light. The fundus is normal. If retinitis is also present it is only a coincidence, since these conditions have not a common pathology. Amaurosis is transitory, retinitis is more persistent. The duration of amaurosis is in general short; sometimes it leaves behind a hemianopsia. The prognosis is usually good; the two factors to be considered in the prognosis are the condition of the fundus and that of the urine. The cause of amaurosis is a cerebral lesion; the preservation of the pupillary reaction to light shows that the nerve, retina, chiasm, optic thalami, and corpora quadrigemina are normal; the lesion is further back in the occipital lobe; being bilateral, amaurosis is total. Traube thinks that there is a mechanical compression of the encephalon from edema the result of arterial spasm. Widal calls it cerebral hypertension due to retention of chlorides. Diagnosis is easy, only hysterical conditions needing to be excluded. Albuminuric retinitis may occur in women who have had no previous renal affection and who have other symptoms of intoxication; in those who have had some infection, and in those who have had previous renal complications. It generally occurs in the sixth or seventh month. There is infiltration and degeneration of the retina, which often becomes temporarily detached. The papilla is hazy. The visual troubles are not in proportion to the optic lesions. Blindness comes on gradually, beginning with inability to read or to recognize friends. The prognosis is favorable, but not for entire return of sight. Out

of 43 cases 16 per cent. were cured; 58 per cent. improved; 25 per cent. remained blind. The condition is liable to return in another pregnancy. The prognosis for the child in these cases is bad; this lesion shows a serious form of poisoning. Optic neuritis is due to edematous infiltration; the prognosis depends on the degree and duration of compression; if prolonged, complete atrophy may occur. Severe cases demand the interruption of pregnancy if sight is to be saved.

When Shall we Operate in Puerperal Septic Infection?—J. O. Polak (*N. Y. State Jour. Med.*, 1911, xi, 155) urges conservatism in deciding upon surgical intervention in these cases, including their careful individualization. Nature is competent in the majority of instances to localize and circumscribe the infection. Operative procedures should be avoided if possible, and are not indicated unless there is demonstrable evidence of intrapelvic or abdominal inflammation, necrosis, or suppuration. Curettage, douches, and examinations during the acute stage break down barriers and open avenues for the further dissemination of sepsis to the myometrium, parametrium, and adjacent tissues, and the danger from curettage increases with each month of pregnancy. Enormous pelvic and abdominal exudates may disappear without operation, and in time enlarged ovaries, tubes, etc., may assume their proper size and function. As long as the patient's general condition improves, no surgery is advisable. All operations are attended with less risk after the acute stage of the infection has subsided, and an exact diagnosis is more easily made at this time. After the uterus is thoroughly emptied, the pelvis should be left absolutely alone, and we should make every effort to support our patient, and increase her natural blood resistance. Vaccine therapy has a definite but limited field in the treatment of puerperal septic infection. Inoculation with autogenous vaccines will promise prompt results in staphylococcic and colon bacillic infections, but in streptococcic poisoning vaccine treatment is unreliable and is of value only when the virulence of the germ is attenuated, or when nature has already developed a phagocytic defence. Extraperitoneal drainage of local foci should be elected when possible, either by incision just above Poupart's ligament or by posterior vaginal section, and when this is impossible because of an inability to determine the exact anatomical relations of the local focus, an exploratory laparotomy is justifiable in order to make an exact diagnosis, and determine upon the safest route for drainage. Operative interference, in the acute stage of sepsis, is indicated only in general purulent peritonitis, postabortal pelvic peritonitis, infected tumors in or near the genital tract, and uterine rupture, when said rupture has occurred in the course of labor and has been handled outside of a well-managed maternity. Thrombophlebitis is a conservative process on the part of nature to limit the infection, and any form of pelvic manipulation only tends to break down and separate parts of these thrombi, extending the infection to the more remote parts, thus jeopardizing the patient's life.

Bacteriological Examinations of the Blood in Puerperal Fever.—M. Semon (*Monatschr. f. Geb. u. Gyn.*, Feb., 1911) details the results of the examination of the blood in eighty-six cases of fever after labor. There may be two reasons for the absence of germs in the blood; either the number of germs is so small that very few reach the blood, the majority of them being fixed in other internal organs; or the blood has destroyed the germs through its contained antibodies. The nature and the number of germs are of importance in the prognosis of these cases. A third factor is the power of resistance of the organism. In eighty-six cases of women who had fever after labor, whose blood was examined for bacteria, germs were found in twelve cases. In the cases selected fever began within twenty-four hours of labor. Of the twelve positive cases six died. Four showed streptococci and two staphylococci in the blood. One followed a septic abortion, with endometritis and peritonitis, dying on the seventh day. The lochia contained hemolytic staphylococci, and once a few were found in the blood. The autopsy established the diagnosis. The other died of pyemia on the forty-eighth day after delivery of a face presentation by version. In the lochia were hemolytic streptococci; the blood contained staphylococci in small numbers on the sixteenth and seventeenth days. The other fatal cases had streptococci in the blood. Three cases were delivered by operations, two with contracted pelvis. One of these showed hemolytic streptococci in the vaginal secretion. The second came to the clinic with membranes ruptured two days previously and hemolytic streptococci were found in both lochia and blood. The third, with contracted pelvis, rupture of the uterus, and abdominal extirpation, died. Hemolytic streptococci were found in the secretions and in the blood postpartum. The fourth, delivered normally, but with manual extraction of the placenta, had fever on the fifth day. On the eleventh day hemolytic streptococci were found in the blood. The cases that recovered were two of staphylococci and four of streptococci infection. One was a spontaneous abortion, with bacteria in the blood on the second day. The germs are thus seen to be driven into the blood by normal contractions, as well as by operative procedures. The second occurred after a severe high-forceps delivery. Of the four recovered streptococci cases, three were abortions, one at full term. Of the seventy-four cases which showed no bacteria in the blood, four died; several had peritonitis, and others severe infections.

The Bier Method in Primary or Secondary Agalactia.—Paul and Jean Delmas. (*Bull. de la Soc. d'Obst. de Paris*, Feb., 1911) state that in a case of breast abscess treated by them the diseased breast became dried up during the treatment. A second inflammatory nodule appearing in the same breast, the Bier suction method was used to allay the inflammation. The treatment was successful in putting an end to the inflammation, and at the same time caused a fresh secretion of milk, so that the infant could be nursed. In every gland histology and experi-

ment show that an increase in circulation causes an increase of secretion. The authors advocate the use of the Bier suction method in the treatment of insufficiency of milk in the breast, and in those breasts which contain no milk at all. This seems also to be the best treatment of abscesses of the breast.

Sensibility to Tuberculin of Pregnant and Puerperal Women.—P. Bar and L. Devraigne (*Bull. de la Soc. d'Obst. de Paris*, Feb., 1911) have tested with tuberculin twenty-eight non-pregnant women, 137 women at different periods of pregnancy, and 198 recently delivered. Besides these, 130 new-born infants were tested. The results of the tests in infants was invariably negative; eleven of them were born of women who showed a positive reaction to tuberculin, and thirteen were evidently tuberculous women. Of the non-pregnant women, 75 per cent. reacted to tuberculin 1-10,000 solution, and 89 per cent. to the 1-5000 dilution. Among the pregnant women a much smaller number reacted, showing that the sensibility to tuberculin is lessened in the ninth month of pregnancy. The smallest number of reactions occurred from the fourth to the tenth day after labor; after that they reacted in the usual proportion. In 64 per cent. of pregnant women the reaction was less after delivery; in 17 per cent. the reaction was as usual; in 19 per cent. the reaction was greater than before pregnancy. The authors believe that the reaction is feeble in women whose tubercular lesions become aggravated by pregnancy; in women who are reacting against the disease the tuberculin test gives a violent reaction.

Dystocia from Echinococcus Disease of the Pelvic Organs.—A. Bertino (*Ann. di Obstet. e gin.*, Feb., 1911) tabulates the cases of echinococcus pelvic disease that he has collected from literature. He finds that of 2785 cases, 1291 were men, and 1504 women, showing that this parasite more frequently attacks women. Echinococcus cysts are seen most frequently between the ages of twenty and forty years, corresponding with the years of greatest fecundity in women. They are more frequently located in the pelvis in women than in men. They have been found in all the genital structures in women, paravaginal, pararectal, uterine, tubal, and ovarian regions, in the connective tissue of the broad ligament, in the fascia of the small pelvis, and on the pelvic bones. They are most often found in the posterior portion of the pelvis, adjacent to the rectum; next most frequently behind the cervix and vagina; and least often in the paravesical and precervical regions. They may be primary or secondary to rupture of a cyst preexistent in another organ, and carried by the blood or lymphatic currents. In the pelvis the parasite is generally subserous. These cysts more or less completely occlude the parturient canal and render delivery difficult. In some cases, as in one observed by the author, the cyst ruptures during delivery and permits the passage of a living child. Often it is necessary to perform obstetric operations, forceps, craniotomy, and embryotomy. The author does not believe that any toxic substances are ab-

sorbed that do harm to the mother. Out of thirty-nine cases collected, twenty-seven recovered, and eleven died (one not recorded); one died of exhaustion, one of parasites localized in the sacrum, one of intestinal obstruction, three from rupture of the uterus, five from sepsis. Sixteen children were born alive and nineteen died. We thus see that this complication has a bad effect on both mother and child. The congestion of the pelvic organs and the increased supply of nourishment during pregnancy and the puerperium causes a rapid growth of the echinococcus cysts. The treatment of such cases should be immediate operation before labor comes on.

Vesicular Mole with Vaginal Metastasis.—F. Opocher (*Folia Gynecologica* vol. iv., Part iii, 1911) comments on a case of vesicular mole observed by him, after the delivery of which a similar mass appeared on the wall of the vagina, accompanied by metrorrhagia. This eventually disappeared spontaneously. Cases of mole with metastasis are rare in the literature. Only two cases have been reported in which true moles were found in the vagina. The interpretation of these growths is that they represent an active proliferation of the epithelial covering of the villi, with regressive metamorphosis of the connective tissue of the mucosa. In the author's case he believes that we have to do with a true vesicular mole developed by metastasis. The special formations described as irregular masses of syncytial elements and Langhans cells should be interpreted as vesicular mole reproducing itself. These masses were formed by an epithelial investment represented by syncytial elements and Langhans cells grouped irregularly. It seems impossible to state from clinical phenomena and histological appearances whether such a growth will become malignant. Pestalozza says that one out of ten moles is malignant, while Hart says that only one in one thousand is so. The author has examined all the cases of mole observed during his service in the Institute of the University of Pavia. He finds no exact dividing line between moles having the characteristics of vitality and of death. In fact, they contain structures which show the characteristics of both. The author does not agree with those writers who have found in patients with vesicular moles such grave general symptoms as vomiting, edema, anemia, and emaciation. In the cases seen by him these symptoms have been absent. If the mole is actively proliferating they may be present. Such moles have the characteristics of malignancy.

Myelitis and Polyneuritis in the Course of Toxic Vomiting of Gravidic Origin.—Louis Job (*Ann. de Gyn. et d'Obstét.*, March, 1911) has studied the literature with reference to the occurrence of myelitis and polyneuritis in association with incoercible vomiting of pregnancy. Such neuritis is due to a form of poisoning which causes the vomiting also, but the nature of this poison is not as yet determined. In a case reported by Hergott, in which the patient died after very severe vomiting and neuritis, the autopsy

showed inflammation and degeneration of the nerves examined. Pain and paralysis may occur in cases without vomiting, or develop and regress without any gastro-intestinal cause. In all the cases which the author has collected the pain in the nerves has followed vomiting. The medullary lesions in the nerves and the neuritis form a part of a series of multiple and variable symptoms. Of sixteen collected observations, in six the women went to term, and all of these recovered. Of the infants, one was macerated, one died of athrepsia at five months, two died in one month. The others are not mentioned. In seven cases abortion was produced artificially, two dying. Five women died; six lived to term, five had abortion induced and lived. Prophylactic treatment of neuritis may be undertaken, pregnancy being interrupted as soon as the pulse of the mother remains 100, according to the directions of Pinard. At present the tendency is to think that the causation of this condition is the disturbance of the function of some of the glands of internal secretion. The permanent tachycardia makes us look for a neuritis of the pneumogastric nerve; but as this elevation of the pulse is constant in cases of incoercible vomiting this neuritis must occur frequently.

Uterine Pregnancies Occurring after Extrauterine Pregnancy.—Elis Essen-Møller (*L'Obst.*, March, 1911) says that an extrauterine pregnancy may be followed by a normal one, or by a tubal pregnancy on the opposite side. The author submits a resumé of the cases of extrauterine pregnancy which have occurred at Lund during his service. They were fifty-six in number. Of these he followed up thirty-nine cases. Eighteen became pregnant again. There were twenty-four pregnancies among them; two had abortions, one after two living children, the other after one living child; there were two new tubal pregnancies. Out of twenty-eight pregnancies the tube had functionated normally in twenty-seven cases. If seventeen women had normal deliveries out of eighteen, we are justified in leaving the other tube in place in such cases. Even if the opposite tube is surrounded by adhesions it need not always be removed. A new pregnancy seems to be more likely to occur in cases in which abdominal drainage has not been employed. In non-operated cases pregnancy and labor have brought about complications, sometimes even death. In the cases operated on, abortions have been rare and pregnancies have occurred without complications. In the treatment of these cases it is not sufficient to save the life of the patient for the time being, but we should also endeavor to place the genital organs in a position to carry out their functions normally if possible.

GYNECOLOGY AND ABDOMINAL SURGERY.

Production of Tuberculosis in the Genito-urinary Organs.—George Walker (Johns Hopkins Hospital Reports, 1911, xvi, 1) presents an extensive experimental study of this subject devoted chiefly to the genito-urinary organs of the male but including those of the female. Rabbits and bovine tubercle bacilli were

employed. Regarding females, he says that tuberculosis is never primary in the bladder and that the bladder is never infected from the blood; secondarily, it follows disease in the kidney. Injection of tubercle bacilli into the bladder produces an infection even without injury to the mucosa or retention of the bacilli by artificial means. The disease rarely extends from the bladder to the kidney; in order for this to occur a condition must be present which permits the regurgitation of tuberculous urine during the contraction of the bladder. Experimentally, the bladder was infected: a. by the simple injection into it of tubercle bacilli, it not being necessary to wound the mucosa or to retain the bacilli for any length of time; b. by the introduction of tuberculous lung, or cotton impregnated with the bacilli, either by way of the urethra or through a suprapubic opening; c. by the injection of the bacilli into the ureters; and d. by the injection into the bladder wall.

A primary tuberculosis in the kidney is not rare; in genito-urinary tuberculosis the primary focus is most frequently in the kidney. The bacilli are first arrested in the glomeruli, and from these the process spreads. Not infrequently it extends down the tubules. The bacilli reach the kidneys: a. through the blood; b. by extension from the surrounding organs (rare); and c. by ascension from the bladder (very rare). In a large number of instances of one kind or another of bladder tuberculosis, there were only two in which the process had ascended from the bladder to the kidney; in both of these there was an extensive invasion of the bladder wall and adjacent ureter so that regurgitation upward could occur. Experimentally, the kidney was infected a. by injection of tubercle bacilli into the aorta; b. by injection into the renal pelvis; and d. by injection into the urethral orifice.

There is one record in the literature of tuberculosis of the ureter without any involvement of either the bladder or kidney. Except in this case, the ureter is apparently always involved secondarily to either the kidney or the bladder. Experimentally, the ureters were infected: a. by direct injection into the orifices; b. by injection into the pelves of the kidney.

1. Primary tuberculosis of the vulva is exceedingly rare. The few instances reported were observed only clinically, and there exists no autopsy observation of an isolated process. Tuberculosis of the vulva is nearly always associated with tuberculosis of the vagina or uterus. The process described under the name of rodent ulcer has been found by Reick to be tuberculous. There is a vegetating tuberculous type which has been mistaken for a newgrowth. In no instance of the reported cases has it been undoubtedly proved to have been produced by coitus; it is possible, however, that the vulva may be the portal of entry in a few cases. Experimentally, in several animals an extensive tuberculosis of the vulva was produced by the injection of tubercle bacilli into the vagina. It is likely that a slight trauma was caused at the time of operation.

Primary tuberculosis of the vagina is extremely rare. It usually follows disease of the tubes or ureters; in a few instances it has been secondary to disease of the intestine. Infection from coitus has not been proved; there are, however, a number of reported instances in which it was thought to have taken place, and there is every reason to believe that it may occur. Experimentally, the canal can be infected: a. by injection of tubercle bacilli; and b. by the introduction of tuberculous material. Preliminary irritation or injury to the mucosa is not necessary.

Tuberculosis of the cervix is not common, and primary involvement is exceedingly rare. It is usually preceded by tuberculosis of the tubes or uterus. Infection from coitus has not been proved, but there are numerous cases reported which lend support to the theory that it does occur.

Primary tuberculosis of the uterus must be exceedingly rare. Several pathologists of wide experience have never seen an example. The reported cases are based mainly on clinical examinations, and possibly, therefore, were wrongly diagnosed. In rare cases the organ becomes infected from the blood, but usually from the tubes. Direct infection from coitus has been proved. In rabbits the disease may pass from one horn to the other. Experimentally, the writer observed one animal in which the process had extended into the uterus from the vagina, and in another the mucosa of the horns was tuberculous. It is possible that the material may have been injected into the uterus at the time of operation.

The Fallopian tubes are the most frequent seat of tuberculosis of the female genitals (85 per cent. of all cases). In about 90 per. cent of these cases the bacilli are deposited from the blood.

In the writer's series, two animals had tuberculosis of the ovary resulting from a surrounding process. In the human subject there have been three cases of tuberculosis reported as primary in the ovary; but in none of these was it proven that the initial lesion was there.

Schmorl has shown that tuberculosis of the placenta is much more frequent than was supposed. He observed sixteen cases. Tubercle bacilli have been found in the umbilical vein and various tissues of the human embryo, and numerous observations of tuberculous processes in the embryo and new-born are recorded. Tubercle bacilli have been found in the rabbit's and in human ova.

Treatment of Antelexion of the Uterus. H. T. Byford (*Jour. A. M. A.*, 1911, lvi, 727) recommends for the treatment of obstinate and severe cases of antelexion with dysmenorrhea and sterility persistent dilatation sufficient to permit the passage of a number 20 male sound for one to two years. He has sometimes commenced by dilating biweekly with a small block-tin sound, increasing gradually to a number 20. He has maintained this dilation, by means of weekly dilations for a time, then bimonthly, then monthly until the year was up. As a rule he has

had the patients come back in six months or a year for a few weekly dilatations in order to be sure of permanency of results. In most cases he prefers beginning with divulsion under general anesthesia and has then prevented contraction by the periodical passage of the sound. The important and indispensable part of the treatment is its continuance for many months. In the event of a return of dysmenorrhea an immediate resort to the treatment gives prompt relief. A few biweekly dilatations followed by a few monthly ones usually suffice to render the cure permanent. The dilatation should be as wide each time as the patient will tolerate because the greater each dilatation and stimulation the greater the effect on development. The temporary pain of one or two treatments each month is more easily and willingly borne than the monthly dysmenorrhea. The pain ceases the moment the sound is withdrawn. The patient takes a copious normal salt douche before leaving home for the office. After the introduction and adjustment of a sterile bivalve speculum, the vaginal fornices and cervix are swabbed thoroughly with a 5 per cent. solution of phenol, and the sound, after having been curved to suit the case, is dipped into the same solution immediately before being passed. Before removing the speculum the writer disinfects the uterine cavity, and introduces a dry sterile wool tampon under the cervix and leaves the latter for twelve or twenty-four hours for its dilating effect on the vaginal fornices.

Medicinal Treatment of Uterine Hemorrhage.—Robert Asch (*Med. Press*, Mar. 1, 1911) says that a possible pregnancy or abortion must first be excluded. Menstruation can be considered to be Physiological only when it takes place in a certain regular manner, within certain limits which, however, are different in individual cases. Abnormal bleeding is arterial or venous. Arterial bleeding, is explainable by want of contraction. Apart from the cases in which a change of form of the organ prevents equable pressure on the mucous surface, as occasionally is the case when myomata are present, failure of muscular apparatus may be a cause of the hemorrhage continuing. To arrest the hemorrhage, muscular contraction may be brought about by mechanical stimulus, by electrical treatment, by massage or ergot. The fear that ergot will interrupt a normal pregnancy and bring on abortion is not justifiable. In all venous hemorrhages, cotarnin is called for. The hydrochlorate of cotarnin is known as stypticin. This is not a specific for bleeding, but it may arrest venous hemorrhage through its action in relaxing muscles.

Stypticin is especially useful when given four or five days before an expected period—five tablets of 0.05 gm. each. It is given again before each period until menstruation is forced back to its proper term. If in disease of the heart menstruation is excessive, stypticin or styptol may be given *per os*, more actively subcutaneously or into the muscles. The hemorrhage that

results from venous stasis brought about by retroflexion of the uterus, and that is not arrested by ordinary means, calls for cotarnin. If we have not to deal with hemorrhage arising from relaxed uterine walls, if we also find no changes about the genitalia that point to venous congestion, hydrastis is in place. The writer has never seen increase of the hemorrhage with arsenic; it may, therefore, be combined with hydrastinine in the treatment. When we have succeeded in bringing the menses to their normal condition, and they continue in that state without the hydrastis, arsenic may be replaced by iron.

Obliteration, Carcinoma, and Diverticulum of the Appendix.—

The examination of 5,000 specimens and a comparative study of the pathology and clinical histories in 2,000 cases by W. C. MacCarty and B. F. McGrath (*Surg. Gyn. Obst.*, 1911, xii. 211) confirms the percentage of obliteration found in the appendix by other observers. Obliteration seems to occur as the result of an inflammatory process as shown by its histology, the time of occurrence, its irregularity of occurrence, the duration of the process, and the higher frequency in appendicitis than at autopsy in general. Many appendices become acutely inflamed during the process of obliteration and therefore an obliterated appendix should be removed if possible. Carcinoma may occur at practically any age. It was impossible to make the diagnosis of carcinoma from the external appearance in 77 per cent. of the cases of carcinoma. The high frequency of carcinoma in obliterated or partially obliterated appendices may demand removal of all partially or completely obliterated appendices. Carcinoma of the appendix occurs in association with changes in the appendix which are related to the process of obliteration. Carcinoma of the cecum probably arises from the appendix only in a very small percentage of the cases. Diverticulum of the appendix does not seem to bring about symptoms so early in life as the appendix ordinarily does, but a higher percentage occurs in acute appendicitis.

Autonomic Manifestation and Peripheral Control of Pain Originating in the Uterus and Adnexa. C. A. L. Reed (*Jour. A. M. A.*, 1911, lvi, 862) says that the word "autonomic" as applied to the manifestations of pain of visceral origin, signifies the expression of that pain in some superficial muscle or muscles rather than in the viscus in which it has its initial causation.

Visceral pain, so far as the abdomen, pelvis and thorax are concerned, is expressed chiefly but not exclusively in the autonomic algetic areas of the protective walls covering the respective viscera, such algetic areas corresponding in extent with the peripheral distribution of the autonomic nerves coincidently with the peripheral distribution of the respective spinal nerves in the muscles and subserous connective tissue. These distributions can generally be determined clinically by determining the area of partial hyperalgesia. The pain itself, consisting chiefly of hyperexcitation of muscle irritability, can be partially and, as a

rule, entirely, inhibited by inhibiting the muscle sensibility in the hyperalgetic areas. The same principle applies to the peripheral control of pain originating in the parturient uterus, with the difference that the infiltration of succeeding muscle zones must be practiced with the corresponding advance of the delivery. The writer describes the technique of infiltrating the muscles of the hyperalgetic areas with a solution each dose of which contains morphin hydrochlorid gm. 0.01, novocain gm. 0.04, scopolamin gm. 0.015, in normal salt solution. This he advocates for the temporary relief of pain pending the removal of the underlying cause. [The writer does not state that he has found a single injection of this strength in other regions inefficient. His contentions would be more convincing if this were proven.]

Complete Amenorrhea Probably of Hereditary Origin. A. R. Hoover and J. K. Warden (*Surg. Gyn. Obst.*, 1911, xii. 288) report the case of an apparently normal Greek woman about forty years of age who had never menstruated. She was the mother of eleven children, one of whom a girl of fourteen, had not yet menstruated. The patient was married at fifteen and her last child was born four years ago. Her grandmother never menstruated and her mother did so only once in every one to two years.

Continuous Insufflation of Oxygen in the Treatment of Generalized Peritonitis.—S. Banzet (*Presse méd.*, Feb. 1, 1911) gives the results of the use of oxygen insufflated continuously into the abdomen in general peritonitis. The oxygen is allowed to flow slowly from rubber bags or ordinary cylinders through the drainage-tube into the lowest portion of the abdominal cavity. It has a very favorable action on the general condition, acting as a stimulant to the cardiovascular and respiratory apparatus, lessening the paralysis of the intestines, and causing diuresis, and thus aiding in carrying off the infectious materials. It acts mechanically by preventing the formation of adhesions, and by removing from the abdomen a large amount of discharge, and it has a biological action in preventing the multiplication of anaerobic bacteria, while it lessens the virulence of the aerobes and the toxicity of their products. The author's case was one of rupture of a parasalpingitic abscess, in which the peritoneum was bathed in the sero-pus. A laparotomy was done with removal of the sac and drainage, and the insufflation of oxygen at once begun. The patient's condition changed at once from very bad to excellent and she rapidly recovered.

Presence of Gonococci in the Circulating Blood in Gonorrhea.—Filipo Lofaro (*Il Policlin.*, Feb., 1911) refers to numerous researches proving that in blennorrhagic arthritis the gonococci are found in the joints, showing that they are the direct etiological agent in the production of the arthritis. It has also been shown that the complications of gonorrhea are only new localizations of the gonococcus. The author has studied the question of whether in ordinary cases of gonorrhea the germs are to be found

in the blood. The cases in which the blood was examined were sixty-seven in number. In thirty-nine the germs were found in the blood. These were all cases of urethral gonorrhea, acute or chronic. In the acute cases the germs were not found in the blood, while in the deeper seated chronic cases they were found to have entered the circulation. The author believes that it is only in cases in which the germs are especially virulent and the soil appropriate that the gonococci enter the blood. The method of entrance into the blood is as yet unknown.

Retroperitoneal Cysts of the Ovary and Parovarium.—J. Vanverts and H. Paucot (*Ann. de gyn. et d'obst.*, Feb., 1911) say that a cyst that develops in the layers of the broad ligament may send prolongations backward and downward which displace the culdesac of Douglas, and insinuate themselves under the mesocolon or mesentery. The cyst is then covered in front with peritoneum: first, by the anterior layer of the broad ligament; second, by the posterior layer of the same; third, by two layers of iliac mesocolon or mesentery. The neoplasm is placed behind the sigmoid flexure or intestine. The cyst may detach the peritoneum from the posterior face of the uterus and be found in contact with the muscle of the posterior wall of that organ. Any cyst developed in the broad ligament may become retroperitoneal. The diagnosis of this type of tumor is never made before operation. The adhesions which bind the cyst to the intestine are very hard to separate and make the disease of much more than the usual severity. The indications for hysterectomy are found in the simplicity of the operation and in the uselessness of any other procedure.

Non-Operative Treatment of Cancer of the Uterus.—Luigi Mangiagalli (*L'obstet.*, Dec., 1910) examines all the measures for the treatment of cancer of the uterus that are non-surgical, excluding as surgical all forms of curettage, thermo-cauterization, etc. He admits that some cancers show a tendency to spontaneous cure, that old foci degenerate, but are replaced by constantly growing new ones. As to the drugs that have been used for the cure of cancer, all those that are taken internally are useless. Jequirity has a remarkable action on cancers of the skin and mucous membranes, but for internal cancers is useless. Opothorapy has had no effect. Ferments, such as trypsin, have not carried out their promises. Cancerous serotherapy by means of injections of cancer tissues, that is, cancer treated by cancer, is valueless. The treatment by bacteriotherapy, erysipelas toxins, has proven too dangerous in its effects for general use. The micrococcus neoformans, as used by Doyen, in 242 cases of advanced cancer, gave forty-two cures, that is 17 per cent. Of the eight uterine cases none was unquestionable, since all had been operated on and the time which had elapsed without recurrence after this treatment was no longer than that after operation. Neither curative nor preventive results of this treatment seem sufficiently proven. Schmidt's mucor racemosus, as

used by the author in five cases, showed favorable results in a few cases. The effects of fulguration, radio-therapy, and hot air treatment seem to have been better than those of other methods, when combined with partial operations. The beneficent action of fulguration cannot be denied. The author's conclusions from his review of all these therapeutic measures are that no other treatment has given the same satisfaction as the careful and thorough removal of the tumor. Some of these measures applied to inoperable cases have had a measure of success, delaying recurrences; but none of them promise a certain and definite cure in all cases.

Etiology of Ovarian Dermoid Cysts and Considerations on the Contained Hairs.—M. Yamasaki (*Monats. schr. f. Geb. u. Gyn.*, Jan., 1911) states that from 1902 to 1909, 203 cases of ovarian tumors were operated on in the clinic of the university at Kumamoto, Japan. Out of these there were seventy-one dermoids and 132 other tumors. Of 241 extirpated ovarian tumors 84 were dermoids, that is 34.85 per cent. This is a considerably larger proportion of dermoids than is given in any other statistics published up to date; in fact it is double most reported statistics. The age of the patient is from a few months to sixty years, the majority being between twenty and thirty years of age. Snequireff maintains that in such cases there is an increased fruitfulness of the mother. Pfannenstiel thinks it untenable that there is any hereditary element in this species of tumor. Freund thinks that infantile uterus is often found in connection with these tumors. This condition is more frequent in the right than the left ovary. The tumor is bilateral in about 8 per cent, of cases. These tumors generally contain hair, and this may be of any color from white to black. The color of the patient's hair bears no relation to the color of that found in the cyst. The hair of Japanese women is black, but blonde and white hairs were found in the tumors observed. The hairs are from a few millimeters to some feet in length, and they may be rolled up in snarls, single, or in bunches. In a case observed by the author they were snowy white.

Recurrence of Optic Neuritis after Administration of Salvarsan.—R. Kowalewski (*Berl. med. Woch.*, Dec. 12, 1910) records a case of luetic iritis in which after an injection of 606 all symptoms disappeared temporarily. But after two weeks there was a recurrence in the iris with inflammation of the optic nerve. There was a typical optic neuritis with descending perineuritis. The bad sight occurred ten days after the severe headache which would indicate the occurrence of a meningitis. This goes to show that we cannot count upon a permanent cure from the use of salvarsan.

Total or Subtotal Hysterectomy.—Rouville (*Bull. de la Soc. d'obst. de Paris*, Feb., 1911) discusses whether we should do total hysterectomy in diseases of the uterus, or only a subtotal operation. He believes that both the total and the subtotal operations have

their place. Out of sixty-six laparotomies, of which forty were subtotal and twenty-six total, the author had but two deaths, both after the subtotal operation. One died of postoperative dilatation of the stomach; the other of shock. In neither case was the nature of the operation the cause of death. The "peril of the vagina" seems to the author to be reduced to zero by sterilization of the vagina with tincture of iodine before the operation. After his total operations he has never had any trouble from the vagina. The subtotal operation is more easily and quickly performed. When there is need of drainage it is best secured with a tube in the vagina. A tube in the abdomen has a much less favorable effect. According to some authors the portion of the cervix left behind atrophies and becomes like that of a nullipara; but in many cases it is the seat of an endometritis which continues and keeps up a vaginal discharge. It may become inflamed or degenerate. Some think that the pelvic floor is better preserved by leaving a portion of the cervix. The author believes it is just as well supported by the utero-sacral ligaments and the muscles. If there is any disease in the cervix the author removes the whole uterus.

Some Results of Aero Thermotherapy.—Robert Dupont (*Ann. de Gyn. et d'obst.*, March, 1911) reports two cases of wounds of the vagina or perineum, in puerperal women, in which sepsis was present, which were treated by intensely hot air with a very favorable result. In both cases the wounds were caused in the course of instrumental delivery, and the edges had been infected and were sloughing, while the patients were septic. The use of hot air at the temperature of 700° F. caused a healthy action of the tissues which healed rapidly after the heat application.

DEPARTMENT OF PEDIATRICS.

ORIGINAL COMMUNICATIONS.

DIAGNOSTIC SIGNIFICANCE OF DISTURBANCES OF CONSCIOUSNESS IN CHILDHOOD.

BY

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Loss of consciousness may have a gradual or a sudden onset, and either type may exhibit varying degrees of completeness.

The least marked of all forms is that which is known as somnolence, and which is characterized by a persistent drowsiness from which the child is readily aroused. Stupor is more marked in degree, and is evidenced by a persistent sleepiness from which it is difficult to arouse the child, and when this is done, it is only for a very short time.

Coma is still more profound, and it is impossible to arouse the little one, no matter how severe the measures used. Coma vigil is evidenced by the child lying with open eyes, but remaining absolutely unconscious. There may be an associated delirium, with active movements of the extremities.

Diagnostic significance: Somnolence has no especial significance, except as it is the first stage in a gradually developed coma and so indicates the occurrence or imminence of such. Stupor is observed also as the condition between coma and somnolence, but irrespective of this connection it is observed most frequently in asphyxia from any cause. Coma may be suddenly developed, as is typically seen in insolation. Syncope is a sudden loss of consciousness which is due to brain anemia and such may occur from violent muscular exertion, independent of insolation.

When coma is gradually developed, it may depend upon one or more of several conditions. It is the usual accompaniment of narcotic poisoning and uremia. It may accompany any of

the febrile diseases, and particularly the acute infectious ones, pyemia, septicemia, embolism and thrombosis of the brain, injuries to the head or brain, or to inflammatory disease of the same. It is usual after attacks of eclampsia and occurs with epilepsy.

Poisoning from opium is evidenced by very deep, slow, and shallow respirations and infrequent but full pulse. There is normal temperature and the pupils are markedly contracted, but equally so, which latter is very important to determine.

In uremia it is rare that unconsciousness develops without convulsions. The pupils are either normal or equally dilated, and the pulse of a high tension and infrequent. No reliance can be placed upon the temperature. Edema is usually evident in some portion of the body.

The coma occurring with epilepsy offers little difficulty in distinction. There is the history of the fit, but, even regardless of this, there is usually the evidence of such in the bitten tongue and the bloody foam (clear when no injury occurs) about the lips. The face is greatly congested and the breathing stertorous. Coma is of short duration showing progressive improvement until full consciousness is restored. Almost invariably the bowels and bladder have been evacuated during the seizure.

Syncope is readily recognized by the pallor of the face, which is marked, by the weak pulse, shallow and almost imperceptible respirations, and the widely dilated pupils as they are seen through the partly open eyes. The cause may be evident and is usually an emotional one. If there are added to the foregoing symptoms cyanosis and some stertor, the cause is probably a cardiac one.

Insolation would be suspected from a history of exposure in the heated term, and if the skin was unusually dry and hot. The conditions under which the child is found would help in determining the occurrence of poisoning from illuminating gas and from alcohol. Hysteria is rarely the cause of coma, and the disease itself is rare before the seventh year. The coma is never deep, and the stigmata of the disease are usually well marked.

Delirium.—This state of mental agitation is evidenced by marked restlessness, incoherent mutterings, delusions, and sensory perversions. It may be active, in which state it is difficult to restrain the child, or may be muttering, in which the little one lies quietly enough with very evident mental agitation.

Delirium occurs with great frequency during the course of febrile diseases and quite regardless of the intensity of the pyrexia.

In some conditions it is more evident with low temperature than in others, and this is particularly true of typhoid fever, in the course of which it commonly occurs. It is intimately associated with inflammatory cerebral disease, the septic infections, and uremia. In hysteria it may be marked, as it is in the insanities, both of which are not common to childhood.

42 GATES AVENUE.

HEMIPLEGIA OCCURRING DURING PERTUSSIS.*

REPORT OF A CASE IN A CHILD.

BY

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FEMALE, aged three and one-half years. Previous history was that the child had experienced a perfectly healthy childhood with the exception of an attack of lobar pneumonia at the age of one year and two months. This followed a typical course and ended without any complications or sequelæ.

She was an unusually robust and well nourished child until her present illness. For three weeks she had suffered with a moderately severe pertussis with six to eight paroxysms during the twenty-four hours. On an unusually inclement day she was allowed to go out and returned home with a chill which was severe enough to demand active treatment. Then followed an attack of bronchopneumonia which was severe for several days with the high temperature being between 104° and 105°F . and the low between 101° and 102° . On the eighth day of the bronchopneumonia, the physical signs were decidedly improved and the temperature for the next two days did not go above 100.5° per rectum. During the bronchopneumonia, the paroxysms of the pertussis were reduced in severity and in number, but with its clearing up there was an almost immediate increase in both the number and severity.

On the eleventh day after the onset of the bronchopneumonia, the temperature was normal in the afternoon and the child's condition generally excellent.

* Read before the Kings Co. Med. Soc. (Pediatric Section), March 22, 1911.

Late in the afternoon, she experienced her most severe coughing spell which lasted for an estimated fifteen minutes and was followed immediately by a fainting spell.

By the time the attending physician, Dr. Dincin, arrived, the child was apparently exhausted by the paroxysms of coughing and the temperature which had been normal a few hours previously had jumped to 104°F.

Dr. McCorkle saw the case in consultation at 7 P.M. Three hours later, I first saw the child in consultation with Dr. Dincin and the examination revealed the following:

The child was lying in a semistuporous state from which she was roused by most severe paroxysms of coughing which completely exhausted her and persisted for from one to three minutes with four- or five-minute intervals.

The face was puffy and red and the eyes slightly ecchymosed and the eyeballs markedly suffused and with traces of rupture of the capillaries visible.

The pulse was slow, full and of a high tension. The respirations shortly after the paroxysms were deep and stertorous. The left pupil was dilated more than the right.

There was a left sided hemiplegia with inhibited reflexes. The urine was passed involuntarily. There was decided flatness of the left side of the face and upon examination of the mouth, the tongue was found to deviate toward the left side. Immediately preceding a paroxysm and at other times, the child wrinkled the forehead and would close both eyes.

The diagnosis was made of cerebral hemorrhage and as the hemiplegia was complete it was decided that the hemorrhage was small in amount and situated low down where the fibers from the entire central hemisphere come together in the internal capsule.

The treatment instituted was based upon such a diagnosis.

The following day under the influence of morphine and oxygen, the child experienced but two paroxysms of coughing and both of these were slight compared with the previous ones.

During the paroxysms of the previous night, however, the tongue had been terribly lacerated, so that at one portion near the tip, it was practically chewed to a pulp and looked as though it would readily slough off. Although every precaution was taken to avoid an infection or further injury, the organ was in a badly swollen and inflamed condition the following day.

The day following the onset of the paralysis, most of the

hemiplegia had cleared up although there was still considerable difficulty in motion, and sensation was still disturbed.

Through the interest and courtesy of Dr. Dincin, I saw the child at five different times in consultation and this unusual opportunity for observation added much to the certainty of the diagnosis.

The rapidity and consistency with which the symptoms began to clear up under vigorous treatment, lead us to believe that we were in a winning fight, but in this we were disappointed.

Fifty-one hours after the onset of the paralysis, the child suddenly experienced another of her severe paroxysms of coughing and just at the termination of the spell, suddenly fell back dead.

The diagnosis between hemorrhage, embolism and thrombosis is never established with absolute certainty during life.

From what we find at autopsy, we are compelled to admit that the clinical manifestations are misleading.

It was true of this instance, that if we considered the symptomatology by itself, there are certain features (viz., the rapid return to partial consciousness, the rapid improvement in the paralysis and the high temperature following the hemiplegia) which would favor the diagnosis of embolism or thrombosis. Thrombosis, however, almost invariably exhibits premonitory symptoms and the attack comes on while there is a period of rest and commonly occurs during sleep. But, on the other hand, the whole history was decidedly against such a diagnosis. And it is the consensus of opinion of most authorities that the history and not the symptomatology is the main factor to be considered in a differentiation between these three conditions. The history being wholly in favor of hemorrhage and the symptomatology substantiating the history, we were compelled to the diagnosis of hemorrhage during life. Autopsy was refused.

Dana states that if embolism and thrombosis be considered collectively they occur once as the cause of the symptoms to six times from hemorrhage.

SEQUESTRUM OF LABYRINTH.

BY

FRANK T. HOPKINS, M. D.,

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Dispensary, Ear, Nose and Throat, etc.
(With one illustration.)

THIS specimen is a practically complete sequestrum of the labyrinth showing the semicircular canals, the cochlea, the aqueductus fallopii, and the internal auditory canal; and having at its inner extremity a groove which formed a part of the bony canal of the carotid artery. The interest of this case lies in the completeness of the sequestrum, the recovery of the patient, and the bearing which the functional symptoms have on the question of labyrinthine suppuration.

The patient, a girl of sixteen years of age, entered Dr. Dench's service at the New York Eye and Ear Infirmary April 6., 1908, with chronic purulent otitis media of the right side from which she had suffered for fourteen years. During the month previous to admission patient had had severe general headaches and dizziness with tendency to fall to the right, or affected side; and during the few days before admission she had had nausea and vomiting. On admission all these symptoms were present and there was also found a very slight nystagmus. The canal was filled with pus, the membranum tympani partially destroyed and the tympanum filled with granulations. The temperature was 99.4° .

I did the usual radical operation. The mastoid was found sclerosed, and the antrum and attic were found filled with granulations. The incus and malleus were removed and the dura was exposed through the tegmen tympani; no necrosis was found over the labyrinthine structures. There was twitching of the facial nerve when the curet was used near the oval window.

Although during the following days the wound did well, the patient did not improve. In fact, she grew worse. Dizziness and headache became constant, and she complained of pain in the ear.

About three weeks after the operation she developed a slight facial paralysis, but during the succeeding fortnight it gradually disappeared.

On June 8, two months after the first operation, the patient

was again admitted to the hospital. The temperature was 99°, there was a mixed infection, the blood count showed 15,000 white, and 54 per cent. polynuclear.

At the first admission no especial functional tests were made, but before the second operation the following tests were noted:

1. A spontaneous nystagmus, much more marked toward the affected side, but was observed also toward the opposite side.

2. In experimental nystagmus with cold water syringing, there was nystagmus toward the opposite side.

3. There was a condition of vertigo which showed a tendency of the patient to fall backward and to the affected side, in standing, walking or jumping.



4. There was also optic neuritis.

5. In testing Aerial conduction showed the upper tone limit greatly lowered. Bone conduction was not diminished.

In this second operation I reopened and cleaned out the former cavity.

The exposure of the dura made at the first operation was enlarged, the sinus was exposed and also the cerebellar dura from the sinus to the posterior semicircular canal. The dura was not congested or bulging, nor was there pus or granulations over the dura. In other words, there was no evidence of brain abscess. Extensive necrosis was present, however, over the inner portion of the labyrinth, and it was found possible to pass a probe behind and to the inner side of the semicircular canals into a cavity filled with free pus. While enlarging this cavity with the curet, I discovered that the whole bony labyrinth was loose.

This sequestrum was removed with some difficulty. The

attempt to dislodge it broke it into two parts. Of these, one was removed easily, but the second, lying partly under a projecting ridge of bone, had to be chipped with the rongeur forceps before it could be safely drawn past the already exposed dura.* The rough edges of the cavity were smoothed off, the wound partially sutured and the usual dressings applied. The patient made a slow but satisfactory recovery, the temperature never high. Nystagmus continued for a few days, growing always less, and soon ceased.

There was no immediate facial paralysis, therefore the nerve was not injured in the operation. But after thirty-six hours, paralysis began and increased steadily until it became complete. This lasted for four months, until October, but during this last month or so improvement has taken place; the paralysis is slowly subsiding, and I think we may look for an ultimate recovery.

The bearing which the symptom of nystagmus has on the diagnosis of this case is interesting and followed the rules laid down by Barany, viz.:

That in circumscribed labyrinthitis with suppuration we shall find (1) that spontaneous nystagmus is directed to the diseased side, and (2) that in experimental nystagmus with cold water syringing the nystagmus is to the opposite side.

182 WEST FIFTY-EIGHTH STREET.

TRANSACTIONS OF THE CHICAGO PEDIATRIC SOCIETY.

Meeting of November 22, 1910.

The President, JOHN M. DODSON, M. D., in the Chair.

DR. FRANK S. CHURCHILL presented a number of cases.

I. ANEMIA.—CAUSE UNKNOWN.

Baby, two years old, family history unknown, breast fed for two months, then artificial feeding. Was sick one week before admission; now in second week. Feet and hands swollen for few days; throat sore; no shortness of breath. Is quite anemic; fairly well developed and fairly well nourished. Anterior fontanelle is open. Lungs and heart negative, except for soft systolic murmur over precordia and bruit in neck. Liver is

*The two pieces have been united to form the single specimen shown.

enlarged, extending two fingers' breadth below border of ribs in the mammillary line.

There is some enlargement of the cervical, axillary, and inguinal glands; some puffiness of the feet, which is passing.

The chief interest in this case centers in the condition of the blood.

Blood examination shows: Hemoglobin, 30 to 50 per cent.; red cells 2,430,000 to 3,500,000; white cells, 17,350 to 7,600, 70 per cent. mononuclear cells, 30 per cent. polynuclears. There are 40 to 45 per cent. small lymphocytes and 20 to 25 per cent. large. Few normoblasts and megaloblasts; slight poikilocytosis.

The case is one of anemia; whether primary or secondary is the question. I consider it a secondary anemia of severe type due to rachitis.

DR. KARL K. KOESSLER.—I think Dr. Churchill's first case is one of secondary anemia, not due to rickets, however. That is a conception that is exceedingly modern. It is found by pathologico-anatomic examination that rickets is not only a disease of nutrition, but that the bone marrow is chiefly and primarily involved. The anemias which have been reported as being due to rickets have been chiefly of the type of anemia called pseudo-leukemia infantum. If the medullary centers are involved in a child in cases of secondary anemia, then we must find in the blood some signs of bone-marrow irritation. In all cases of anemia due to rickets there have been found in the blood considerable numbers of myelocytes. Dr. Churchill and I were unable to find a single specimen of this type of cell and the number of nucleated reds are few in a child where the myelogenous centers are in the spleen. We can, therefore, in this case refuse the diagnosis of secondary anemia due to poison because of the absence of medullary cells in the blood.

What the anemia is due to I am unable to say. If the child has a relapse we would have to assume that there is a cryptogenetic infection. In this case I would advise the injection of normal serum up to 10 c.c.

DR. FRANK S. CHURCHILL.—I have often seen anemic rachitic children with a blood picture like this, and without myelocytes, and I have always regarded the anemia merely as a part of the rickets. Of course the latter is not a disease of bone. It is a nutritional disease involving all the tissues of the body. It is perfectly conceivable that it can affect the blood-making organs in such a way as to produce all sorts of blood pictures. As to "von Jaacks" disease, this is not now regarded as a clinical entity, but merely as a symptomatic condition of the blood. His original report was based on the observations of only three cases, one a case of severe rachitis, one of syphilis and a third of leukemia. The blood picture which he described has been found repeatedly in other diseases without enlargement of the spleen or liver, which he claimed to be a part of the clinical picture of his disease.

The subject of the anemias of infants is in a complex and

chaotic condition, but we must remember this: A child is in a constantly changing, developing condition, and will do all sorts of queer and unexpected things on the slightest provocation. The ease with which a convulsion is precipitated is an indication of this. The blood-forming organs are similarly in a state of unstable equilibrium, just as is the nervous system.

II. TUBERCULOUS MENINGITIS.

Child seven and one-half years old. Family history negative. Personal history, had scarlet fever last year. Is now at end of fourth week of illness, which began with pain and weakness in legs and arms. Has been in bed for two weeks. Has vomited off and on. Has had severe headaches and did not sleep during that time. Lost appetite almost completely. Is decidedly emaciated, poorly developed, indifferent to surroundings, not unconscious but comatose. Color is good. There is some stiffness and rigidity of the neck and pain on movement. Winces when back of neck is pressed. At times there has been some internal strabismus in left eye. Pupils usually equal but react sluggishly to light.

At times there has been paralysis of the left side of the face. There is some increase in the area of cardiac dullness. The apex is just outside the nipple line in the fifth interspace. All over the precordia and in the back is heard a harsh, rough, systolic murmur—most distinct near fifth and sixth interspace.

Liver is enlarged; otherwise abdomen is negative. The arms are flaccid. He can move the right arm, but there appears to be paralysis of the left upper arm.

The legs have not been rigid. There is no Kernig's sign on the left but it was suggestive on the right side. Patellar reflex is absent. Babinski present, at times, on right side.

Urine is negative. Blood shows 4,400,000 red cells and 10,000 white cells. Differential count is normal.

Blood culture was negative. Two lumbar punctures were negative for bacteria, but showed a clear fluid, and lymphocytes in excess. v. Pirquet was negative. A mitral insufficiency is coincident with the meningitis.

A diagnosis of tubercular meningitis was made in this case, based on the gradual onset, the undoubted cerebral symptoms, and the character of the spinal fluid—clear, many leukocytes,—though no tubercle bacilli were detected. At the suggestion of Dr. Koesstler a Wassermann test was done on the blood and was negative.

DR. C. G. GRULEE.—This spring a three months old baby showed signs of meningeal involvement. I did a lumbar puncture and got an increased amount of fluid, not cloudy, no clots. I took it for granted that it was a case of tuberculous meningitis. There was another case of the kind in the ward. I took the fluid from both cases to Dr. Helmholtz for the Noguchi test.

The one with undoubted tuberculous meningitis gave the characteristic reaction; the other one did not. It cleared up quickly after I gave gray powder. All the meningeal symptoms disappeared and to-day the baby is healthy.

There had been an enlarged spleen, increased temperature, and marked opisthotonus, Kernig's sign, but no eye symptoms. Evidently the case was syphilitic in origin because it reacted so well to the gray powder. A Wassermann was not made.

DR. HENRY HELMHOLTZ.—The Noguchi test that Dr. Grulee referred to was the Noguchi butyric acid test which differentiates true meningitis from cases of meningeal irritation. It was not the Noguchi test for syphilis.

DR. WM. J. BUTLER.—So far as the value of this test is concerned, I do not place much confidence in it. In fact, I think it is of no value whatever. The use of the gray powder in Dr. Grulee's case may have caused the improvement simply by clearing out the intestinal tract, without necessarily having cured syphilis. Sometimes meningeal symptoms will clear up under intestinal elimination.

DR. HELMHOLTZ.—The Noguchi test was positive in the case of tuberculous meningitis and negative in the other case.

III. CHOREA.

Boy eight years old; no information regarding family or personal history. Says he is nervous; is not dizzy and sleeps well. He does not show any choreic movements. When he extends his arm and attempts to spread his fingers, choreic movements are noticeable. He has enlarged tonsils; lungs are negative, also heart, except for systolic murmur in fourth and fifth interspace, soft in quality. Reflexes are normal; no Babinsky. Is very much improved. Treatment consisted of rest in bed. He has a temperature which may possibly be due to an active endocarditis.

DR. WM. J. BUTLER reported several cases.

CASE I. CIRCULAR INSANITY.

Girl, twelve years old; apparently was well until four months ago when she fell, striking her head on bath tub. A week before she was frightened by boys who had thrown her down, apparently for purposes of assault. Shortly thereafter she became very quiet and refused to talk. She stood in a corner all day, neither asking nor answering questions. The first spell of depression lasted ten days. She awoke on the morning of the eleventh day in a state of agitation. She talked incessantly and showed a remarkable memory. There was unusual mental activity. This state lasted exactly ten days and was followed by a second stage of depression. These alternating periods of depression and mania have recurred ever since the onset.

Physical examination is negative except to show some of the

generally accepted stigmata of degeneration. Her previous history, except for above data, is entirely negative. It is evidently a case of circular insanity. The prognosis is bad.

DR. EFFA V. DAVIS.—A case of insanity in so young a child should stimulate us to obtain a better family history. Of course, the prognosis is bad and little can be done to relieve that child, but a persistent effort to get a family history might help us in the future to prevent such children from being born. It can be done sometimes, not by direct questions but simply by talking to the parents. I would like to know whether in this family there was any intemperance; whether there was any insanity, syphilis, or sexual abuse of any kind. That would help us to make the public understand the meaning of these cases. Studying the patient when she is insane is only half our duty; we should try to get at the cause of the insanity.

DR. WM. J. BUTLER.—I agree as to the necessity of inquiring closely into the family history of these cases. The mother, who is now seen for the first time, denies any insanity or nervous disease on either side of the house. Syphilis is not supposed to play much of a part in these cases, and while we will now succeed in getting a better history in this case, it will not help us materially in the treatment of the child. About four or five days before the onset of the first attack she had a fall on her head. She was not rendered unconscious, but that probably had something to do with her condition.

II. BRAIN TUMOR.

Girl eight years old; about three months ago had an attack of measles. Instead of the usual convalescence taking place, some previous existing symptoms, suggestive of brain trouble, headaches, difficulty in walking, etc., became exaggerated. On entering hospital her articulation was poor; she could not protrude her tongue. A couple of weeks later she was unable to speak, but would answer questions by nod of head. The legs were rigid and extended and resisted passive motion. Mentality seemed unimpaired, but a few weeks after entering hospital she passed into state of coma. This continued up to about four weeks before death. The right side of the face was paretic; pupils reacted to light. There is now a vertical nystagmus; no rigidity of the neck; no discharge from the ears; she complains of headaches. There was some dysphagia. The left arm and leg were more paretic than the right, making with the right facial paresis, a crossed paralysis. The reflexes were exaggerated. Babinsky is marked.

Later breathing became quite irregular. There is no tenderness of head or spine. She has now a double retinitis. Spinal puncture and the Wassermann were negative. My diagnosis is a tumor in right side of pons. This has since been verified by a postmortem. The tumor is a glioma.

DR. H. W. CHENEY.—I saw this patient in St. Luke's hospital last summer, but we were at that time unable to obtain the history Dr. Butler gave us. Her parents stated that she had had an injury on the street car and they were at that time trying to recover damages. Therefore they denied anything else which might have had a bearing on the case. She was examined carefully and watched for some time. We gave antisyphilitic treatment, but it was useless. Her symptoms were in the initial stage at the time. Her mentality was better than it is now. She could talk, although her speech was thick and her tongue was beginning to get unwieldy. Some words were indistinguishable. At times there was drooling from the mouth. Symptoms of spasticity were marked and she became unable to walk while in the hospital.

I thought that it was a case of Friedreich's ataxia. Dr. Moyer thought that the injury was the prominent thing in the case, and therefore said it was a case of hemorrhage of the cord, a hematomyelia, which would get better in a few weeks. The subsequent history proves the incorrectness of that diagnosis.

DR. JOHN M. DODSON.—Was a decompression operation considered?

DR. WM. J. BUTLER.—I was in favor of such an operation because the patient would be benefited, although I do not believe that the tumor could be removed.

III. INFECTION WITH MENINGEAL SYMPTOMS.

Girl eight years old, lost appetite, complained of headaches, general indisposition, and was feverish. Condition grew worse; then she became tremulous. Five days ago she trembled all over and complained of stiff neck and back and severe pains in head, arms, and shoulders. She was badly constipated, had no appetite. No sweating.

She is fairly well nourished, although somewhat anemic, well-developed; expression anxious; eyes bright, breathes with mouth open throat appears clear, seems in great pain, is restless and irritable and changes position often. Sometimes she goes into semiclonic condition and cries out loudly—a sharp rasping cry.

Arms are held in semiflexed position and jerking constantly. Fingers and arms can be moved freely, but movement causes considerable pain. Kernig is present on both sides, but no Babinski. Eyes are negative, mind clear, slight paresis of right side.

Lumbar puncture showed increased pressure but fluid was negative as to cells or organisms. Blood showed 11,000 leukocytes with differential count, showing very slight increase in the polynuclears. The urine was negative.

It is probably a case of infection, the nature of which we have not yet determined, with meningeal symptoms. Possibly it might be styled a serous meningitis occurring in course of some infection. The case recovered promptly following spinal punc-

ture. We have no reason to suspect a luetic meningitis here, as the spinal fluid did not show lymphocytes and we could not expect complete recoveries from a spinal puncture.

DISCUSSION ON DR. BUTLER'S CASE OF MENINGISMUS.

DR. HENRY HELMHOLTZ.—It seems to me that in a case such as this the Noguchi test would be of value. It will differentiate the inflammatory from the non-inflammatory meningeal case.

DR. WM. J. BUTLER.—I think that Dr. Helmholtz, point is well taken, but, as I stated, my experience with the Noguchi butyric acid test was not at all satisfactory to me, although that may not represent the experience of others who may have the greatest confidence in its value.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Meeting, of April 13, 1911.

WILLIAM SHANNON, M. D., *in the Chair.*

DR. S. A. KNOPF demonstrated a

WINDOW TENT AND A "STARNOOK" FOR REST AND SLEEP IN THE
OPEN AIR.*

The starnook is essentially a veranda with movable roof and sides so arranged as to be easily opened or closed, by the patient.

REMEDIAL AGENTS OF VALUE IN THE TREATMENT OF PNEU- MONIA IN CHILDREN.

Dr. W. P. NORTHUP read this paper, which he stated had been written for the purpose of provoking discussion and not as an encyclopedic article. In sustaining the heart and vessels to keep the blood-pressure up to the efficient degree for the seven to twelve days' strain he considered the open cold air most valuable. Clinically it had been proved that this was true. Experimentally the explanation of this efficiency had been demonstrated by Howland and Hooker. The proper performance of all functions of the body, glands, muscles, and all tissues had to be backed by a certain blood pressure. Patients slept, retained a clear, bright

*For details see Seventh Edition of Knopf's "Tuberculosis as a Disease of the Masses and How to Combat it."

color, took food, breathed freer, passed the crisis in better form, and entered convalescence in better condition by having been continuously in the cold, bracing, winter out-door-air. Dr. Northrup did not think otitis media was any more frequent in patients inhaling the cold air in the open than among others. He was sure that otitis was more common in institution groups of bronchitic pneumonia patients than in sporadic cases in households. He thought nothing was so bad for a bronchitic pneumonia case as a warm middle room or a crowded warm ward. No matter what one did with a single case he was liable to be sorry. One case proved nothing, but ten, twenty, or thirty years of experience was a basis of conviction. He wished to put the question. "What do experts say in regard to putting in the open air pneumonia, scarlet fever, diphtheria, influenza, pertussis, laryngitis, and otitis media?" Such a discussion might aid many a practitioner to omit some time-honored, annoying, and useless treatment and to substitute a modern helpful one. Dr. Northrup no longer used the pneumonia jacket and rarely used the poultice except for pain. Abdominal distention was one of the most distressing features of pneumonia. He had found an injection of milk and molasses, three ounces of each, was most effective in relieving this symptom. He also recommended hot high saline injections and turpentine in emulsion by injection. In considering pneumonia with tendency to heart failure, the writer said that this might mean different things to different people. When a patient's color changed so that a nurse noticed it, either to a leaden or to a pale color with a tinge of cyanosis and the heat became rapid, that heart was dangerously bad. Early in the disease the toxins acted like an alkaloid tonic or stimulant. At the end of a week it might be that the need of a stimulant became apparent. Even a little before this the stimulant should be begun. He recommended the use of digitalis first, tincture or fluid extract, later strophanthus, alternating dose and dose. After this strychnin and whiskey. The best heart tonic was cold, open, fresh air. The best first emergency stimulant was a hot foot bath; the second, a hot saline and whiskey bowel injection; the third, was a hypodermic injection of camphor, caffeine, adrenalin, or glonoin. The treatment of pneumonia had entirely changed recently, and Dr. Northrup hoped that the discussion would show where the profession now stood.

DISCUSSION.

DR. HERMAN M. BIGGS felt out of place in undertaking a discussion on the treatment of pneumonia in children and he would refer only to one phase of the subject. He thought they all were under deep obligations to Dr. Northrup for the emphasis he had laid upon the treatment of affections of the respiratory tract and other affection in infants and young children by the open air methods; his contributions had been of great value. In the Department of Health, as the result of such experiences,

they had come to believe more and more in the treatment of such affections with open air. At Otisville where they had established a sanatorium for the tuberculous, in a small experimental way, they endeavored to determine how much patients taken from the inside of tenement houses could stand fresh air and exposure. The first two winters, the weather was very cold, for a number of days being at zero or below zero (one week three years ago the temperature was below zero every night and one night 20 degrees below zero) and yet the patients stood the intense cold and the exposure without any detriment. They learned that they could take patients from the inside of tenements to Otisville, place them out-of-doors and, while they might suffer somewhat from the cold, there was no distinct detriment to their condition. On the contrary, the results were always very favorable; at the end of one week or ten days they became accustomed to the open air life and it was not at all objectionable. Many of these patients, when asked if they suffered from the cold, responded, "No." Sometimes three or four inches of snow would fall on the beds on which they slept. The open air treatment of pulmonary tuberculosis was carried on to a great extent at Otisville where they had 425 beds. Only about twenty-five patients could be placed in the four wards; the other 400 must be kept out. Since the institution was opened, five years ago, there had never been a single instance of any severe acute affection of the respiratory tract as the result of exposure to fresh air and the cold. There had appeared cases of tuberculous pneumonia but not the ordinary types that appeared in New York.

Led by these experiences, four years ago when they had such a high mortality at the Kingston Avenue Hospital in Brooklyn, probably caused in large part by the crowded wards, and at a time when contagious diseases were prevailing, the Board of Health decided to build some temporary shacks and to place in these the patients afflicted with bronchopneumonia, keeping them in the open air as much as possible. The results were most gratifying. They found that the cases of severe bronchopneumonia and the septic complications of measles, when taken from these wards and placed in the fresh air, did far better. Many of them went to convalescence without any serious trouble after removal from the wards in the hospital. Therefore, they determined to extend this work, and now there were in course of construction at the Riverside Hospital two pavilions which will contain 160 beds and these will be used for contagious diseases and pulmonary tuberculosis. The infants there are afflicted with diphtheria, scarlet fever and measles; but during the season from January to May the tuberculous patients are cared for. In East Sixteenth Street there are 320 beds and one side of the ward is as open as it can be made. Dr. Biggs believed that this method of treatment of contagious diseases, as well as of all forms of infection, was the one they

must follow in the future. Dr. Biggs had visited Dr. L. Northrup's wards at the Presbyterian Hospital many times; notwithstanding the exposure to open, fresh air, these patients showed only favorable results.

In answer to Dr. Northrup's questions, Dr. Biggs said he believed, and very strongly, that the infections referred to were *contact* infections. In a well ventilated room the infection could not be carried far. Four years ago he visited many of the hospitals for contagious disease in Europe, especially in London, Paris, Berlin and Frankfort, and he was impressed with the fact they did not separate the various forms of infections as we did in this country. In Paris where the infectious diseases were cared for all forms were looked after in the same pavilion but in glass stalls 8×10 feet which opened into a corridor. Twenty of these were in one pavilion. In these contagious stalls were to be found measles, scarlet fever, cerebrospinal meningitis, eczema, and pulmonary tuberculosis. These cases were all being cared for by the same nurses. The doors all opened into the same corridors. In accordance with the suggestions obtained patients were separated by partitions composed of glass and wood and this had been of great service especially in preventing infections or the transmissions of such diseases as bronchopneumonia from the measles wards. In the new measles pavilion all the wards were now arranged in this way. At most there were only two beds to a stall.

DR. CHARLES GILMORE KERLEY said Dr. Northrup had asked him for an expression of opinion of his personal experience in his own work. In assuming the care of a child ill with pneumonia many things should be considered. One must realize that the child's condition was temporarily changed—that there was something that depressed the child's vitality to the utmost; therefore, all the little details of life should be arranged. First, as regards food; a child with a high fever had a lessened digestive capacity; if the food usually taken should be continued there would result in such cases intestinal toxemia and a ballooning of the abdomen. Some laxative should be administered to clear out the bowels, preferably castor oil. The diet should be reduced. Dr. Kerley never used fat milk in these cases. In a general way the food should be reduced, so far as the digestive requirements were concerned, at least one-half or even two-thirds; by so doing one avoided the increased toxemia and the distention of the abdomen which pressed so much upon the diaphragm.

With regard to the clothing, the ordinary clothing should be worn, and not the oiled silk or other jackets which made the child so very uncomfortable. It was important that the child should be kept as quiet as possible; the child was very susceptible to nervous influences when well; when ill they were far more so. The child should get food and rest at stated intervals, every two or three hours. Only one person should be allowed

in the room at one time; the nurse on duty should be allowed with the child, and no members of the family. It was very essential that the child should be kept comfortable. The child should not be fussed over too much. To keep the child comfortable, in many instances, a cold compress or a Dover's powder may be required. Whatever means are used the effort should be to keep the child comfortable so that he would not waste his strength by any unnecessary restlessness or sleeplessness.

With regard to fresh air Dr. Kerley believed that Dr. Northrup was right in what he had stated. However, he was not yet ready to place his cases of true laryngeal inflammations on the roof and in the open; such cases, in his opinion, did not do well in the cold air. One must bear in mind the element of spasm and this spasm was increased when the child was exposed to cold air. In bronchial asthma the cold air may make the respirations more rapid; if the air was fresh but not cold the breathing was more easy. He did not believe that the exposing of the child to extreme cold was good for children with bronchial asthma.

If one placed a child in quiet quarters, with proper feeding, with good and fresh air, with freedom from over tension, one had all that was necessary for his good in many cases. If, however, the child was very ill, something should be done in the line of drugs. It should be borne in mind that the child's natural resources should come into play when he was left alone. The giving of expectorants, of syrups of ipecac, of tulu and other such stuffs certainly upset the digestion of the child, diminished capacity for taking food and took from him a certain amount of energy. Whatever food was ordered should be selected so as not to compromise the child's digestive capacity.

With regard to heart stimulants, of course there were cases in which they were required. But there were cases requiring stimulants and this was due to bad management; some children were in a toxemic condition from causes not due to the disease itself. When stimulants were required Dr. Kerley believed in giving them by the hypodermic method. The stomach in these cases cannot be relied upon. When the pulse was of low tension and irregular, he knew of no better agent than strychnin. Digitalis he did not like because it upset the stomach.

With regard to the use of alcohol, if this was given for a considerable length of time it disturbed the stomach; it should be held in reserve until the seventh, eighth or ninth day and then given only when other medication failed; when alcohol was given, it should be given in large and not small doses. It was surprising how much alcohol these patients can take and retain, especially those who were very sick and septic; they showed no signs at all of intoxication. Do not give alcohol early; give it late in the disease, if at all. It is an agent to hold in reserve.

Another means of improving the condition of the heart and the breathing, as well as the general well being, was hydrotherapy the cool pack or the modified pack.

DR. ROWLAND G. FREEMAN confined his remarks to the consideration of the prevention of pneumonia in measles. The old belief was that measles was to be treated in the dark because of the danger to the eyes; there was no ground to such a belief at all. The eyes in patients with measles did as well in a bright lighted room, with plenty of fresh air, as in the dark. The bright sun-light did not harm the eyes of patients with measles any more than if they did not have the disease.

A patient with measles should be placed near an open window, but the direct rays of the sun should not fall on the patient's eyes. Draughts were not to be feared. There should be plenty of sun-light and fresh air, most difficult things to provide in many families. The results of this treatment are surprising.

Dr. Freeman had experience in many epidemics in institutions and found excellent results from the employment of this treatment. In one institution there were thirty-five cases, and a number of them had bronchopneumonia, four of them of very severe type. In this epidemic they had only one death and this death occurred several weeks after the epidemic. The windows were kept wide open and the window shades were kept up. In the same institution in 1907, they had seventy-two cases. Out of three epidemics in this one institution there occurred but one death, a very low mortality rate. The mortality rate in private practice was something like 4 per cent. Dr. Freeman thought the low mortality rate was due largely to the fresh air.

Perhaps the worst epidemic occurring in an institution he ever encountered was when measles broke out in a scarlet fever ward, the cases mostly being complicated ones. Open windows, sun light and fresh air produced the most wonderful results. The patients were kept as much as possible out of doors on the fire-escapes, balconies, or near the open windows. Measles pneumonia mortality was quite low.

With regard to the treatment of pneumonia, when the first symptoms of the disease appeared, calomel should be administered, a mustard paste applied to the chest, and plenty of fresh air allowed. The patient should be kept quiet and should not be disturbed by people in the room talking. The mustard paste was useful at first, but not later on in the disease. In most cases fresh air did as much good as steam inhalations—in fact Dr. Freeman thought it did more good than steam inhalations. Bronchitis was not a contraindication at all in his opinion. In those cases with a moist skin, the exposure to fresh and open air would soon cause it to dry.

DR. B. RAYMOND HOOBLER said that through the courtesy of Dr. Howland he had had the opportunity of observing the blood pressure on several hundred children in his wards at Bellevue Hospital. The observations had been on children with various diseases and in various stages of such diseases, taken in-doors and after being in the open air. The findings which

he reported applied not only to lobar and bronchopneumonia, but were applicable to nearly all forms of acute respiratory conditions. The children when they were placed in the open air were properly protected with warm clothing, only their faces being exposed. The results might briefly be stated as follows:

As a general rule the blood pressure was increased when a child was removed from a warm ward to the open air. The amount of such a rise was dependent upon several factors:

1. The more sick the child the higher was the rise of pressure.
2. The higher the patient's temperature, the higher the rise of pressure.

3. The warmer the in-door temperature and the colder the out-door temperature, the greater would be the rise.

4. The lower the blood pressure before placing the child in the cold air, the higher would be the rise.

5. The blood pressure remained high as long as the child was left in the open air.

6. Drugs which had the effect of raising the blood pressure in-doors 51 mms. of mercury would have but little effect if given when the patient was out-doors after the maximum effect of the cold had been reached.

7. The maximum effect of cold air was reached after about two hours in the open air.

8. Blood pressure fell gradually when the patient was brought in-doors and reached its minimum after two hours.

9. There was no dropping in the blood pressure below the usual in-door pressure when the patient was brought in from out-doors, as was the case with many vasomotor stimulants.

10. Infants did not respond as well as did the older children.

11. The pulse and temperature would remain about the same, the only difference being in the blood pressure which accounted for the value of out-door treatment.

DR. A. JACOBI asked what relation had the blood pressure to the disease, to the cause of the disease, to the symptoms of the disease, and to the well being of the child. Altogether he believed that the influence of the blood pressure had been exaggerated to a certain extent.

DR. HOOBLER replied that so far as observations went they believed that the children did better when the blood pressure (was approximately normal. There was a lessened mortality when the patients were placed in the open air. The instrument he used in taking the blood pressures was that of Faught of Philadelphia.

DR. JACOBI said that they had heard a great deal regarding pneumonia in children. Dickson in 1835 wrote on the mortality and morbidity; he found that, at that time, as the result of his experience, of thirty-five patients only one remained alive; today, out of the same number it was found that only one died. This difference in the mortality must, of course, be the result of different methods of treatment. At the time Dr. Jacobi

entered into the practice of medicine it was the custom to keep the rooms warm, the windows closed, and the temperature of the room was kept high; water was not given, but warm teas were. The children were kept warm and kept covered—they were never uncovered at all. This was when he received his diploma, just sixty years ago.

There were some points that he wished to bring up. He now was of the opinion that fat milk should not be given in any acute infectious disease; the carbohydrates were the proper food to give. It was well to add carbohydrates to the food; when added to milk the children did better. In such cases as described by Dr. Kerley less fat in the milk was indicated. There were a large number of cases which would get well without any treatment, particularly without any drug treatment; but it had always been a question with Dr. Jacobi whether getting well without any treatment with drugs meant that such patients really did get well. If a patient lived after going through a severe disease without drug treatment, did it mean that he really had a clean bill of health? When a patient suffered from severe symptoms lasting ten, eight, or even five days, with a high temperature that remained unchecked for such a length of time, it was a mistake for one to believe in no treatment. High temperature in these diseases which lasted a long time, temperatures of 105° or 106° F., was injurious to the patient's vitality; it injured the myocardium. It was bad practice to allow such temperatures to go on indefinitely. The treatment with water was certainly indicated in such cases, as well as treatment with drugs.

It was true that pneumonia in children would last two, three or four days longer than in adults, and many cases would get well spontaneously. In a case of a severe pneumonia, lasting six or seven days, it was a mistake to allow the heart to go on undisturbed; the heart from day to day became weaker. It was his practice not to wait until things turned up; he did not believe in "Micawberism." In any pneumonia lasting two or three days the heart would be weakened and he believed it was better to do something for the heart. In many cases it was better to give digitalis from the beginning of the disease, or strophanthus. Seldom had he seen harm result from the administration of digitalis. At times it might be well to give digitalis and strophanthus together. Caffein should never be given to babies who were wakeful. The practice of giving an opiate to children was a good one; warnings against the giving of opium to children had existed for one hundred and fifty years, but Dr. Jacobi had never poisoned a baby with opium and had never seen it do harm, but he did not give it in poisonous doses. He got as good effects from opium in children as he did in adults. His best stimulant however, was camphor given subcutaneously; this might be given internally as well. What he had used for twenty-five years was camphor, not in olive oil but in sweet

almond oil, one part of camphor to four parts of sweet almond oil.

When one dealt with a pneumonia which would not undergo resolution, with the thickened expectoration, etc., inhalations did well, especially those with turpentine. This mixture be used with as good results in adults as he obtained in children. He used the crude turpentine which one bought at any painter's shop. He had also used inhalations of chloride of ammonia which he had burned on a living coal or a hot stove. It aids in the expectoration very much and was well worth trying.

DR. HENRY KOPLIK emphasized the fact that there was a tendency for cases of pneumonia to get well as there was in typhoid fever cases. Again one should remember that the mortality differed according to the ages of the children; above the age of five the disease was more benign, and the majority of the cases got well. The disease in different epidemics reacted differently; in some years the mortality rate was high. It should be remembered, however, that children afflicted with pneumonia had a tendency to recover, but also that they had a tendency to have the disease spread to both lungs, and many of these cases died.

With regard to cardiac stimulants, especially in children, little was known about them.

Dr. Koplik had not as yet placed these patients out on the balconies; he had, however, seen good results from the admission of fresh air and good ventilation. Ten years ago cases of pneumonia were treated with inhalations; in one hospital they had what was called an "inhalatorium."

DR. JACOBI said that if digitalis was to be given in these cases it should not be by the drop method; the drop method was absolutely useless; they should give doses which produced an effect.

DR. J. FINELY BELL asked Dr. Jacobi what effect the giving of digitalis had in children with pneumonia.

DR. JACOBI replied that he rarely used digitalis. If he was dealing with a chronic case, knowing that the heart muscle was uniformly in good condition, he might use this agent. As a rule in these cases the use of strychnin might over stimulate a weak portion of the heart and cause trouble. In cases of chronic endocarditis strychnine should never be used. He seldom used this agent in small children. This was a drug that, he thought, was used too much. In Europe it was not used as it was used in the United States.

REVIEWS.

THE CARE AND TRAINING OF CHILDREN. By LE GRAND KERR, M. D., of Brooklyn. Funk & Wagnalls' Company, Publishers. 12mo, cloth, 75c net; by mail, 82c.

This new book by Dr. Kerr is not to be confused with his previous publication, "The Baby; Its care and Development."

The reviewer fell into this error until undeceived by perusal of the pages. This work deals with a later period from the fourth year to puberty—a period more or less neglected. While many of the phases have been treated of in fragmentary fashion by physicians, much of the writing on this subject has emanated from the pens of laymen. It is well that the best of these teachings should now be brought together by a medical man who has made the child his special field of study.

While the earlier chapters upon the child's room, clothing, diet, bathing, sleep, towels, teeth, weight and development suggest in their titles the familiar divisions of other books, the discussion has here the advantage of being concentrated upon childhood alone. All physicians may not agree with Dr. Kerr in the latitude he allows children in the use of coffee, tea, and candy, but the disadvantages of three modern luxuries rather than necessities of the diet are clearly stated and the final decision left to the parent. It is, however, in the subsequent chapters dealing with: Education, at home, at the kindergarten and at the school; the relation of the parent to the child; the government of the child; punishment; the moral failings of nervous children; and the child's literature, friends, amusements and possessions, that the physician, who is also a parent, will find the greatest interest. Rarely have these important questions been presented with a clearer understanding of the child's needs. For certain portions of this Mr. Abbott's clearer titles, "The Training of Parents" might have been aptly borrowed, for few parents who read them seriously will fail to realize their value, or how far short they themselves fall of the ideal relations to their children.

The questions of sex and evil habits are also treated wisely in the light of the more recent realization of their importance. Any parent, whether physician or layman will find food for thought in Dr. Kerr's pages. It is his best work to date.

T. S. S.

ON ACUTE INTESTINAL TOXEMIA IN INFANTS. An Experimental Investigation of the Etiology and Pathology of Epidemic or Summer Diarrhea. By RALPH VINCENT, M. D. Small octavo, pp. 98, with seventeen illustrations. Price 3/6 net. London, 1911, Balliere, Tindall & Cox.

Dr. Vincent quotes Newman as saying that the mortality from diarrhea under one year of age is steadily increasing in England. While there is improvement in other directions, especially in environment, prematurity, pneumonia and diarrhea increase and tend to keep up the mortality figures. Dr. Vincent believes that: "The fundamental condition favoring epidemic diarrhea is an unclean soil, the particular poison of which infests the air and is swallowed most commonly with food, especially milk." This is the old fetish of malaria (bad air) in a new form. It would probably be equally profitable to

follow up the use of dirty utensils, the sucking of fingers, toys and pacifiers and the activities of the common house fly. The author undertook a series of experiments to show that sterilization of milk as it is usual practised in the home kills the protective lactic acid forming bacillus, and that such milk if exposed in the home to a temperature of 85° F. for twenty-four hours, will, if fed to kittens, produce an invariably fatal disease. The characteristics of this disease are: first, marked alkalinity of the alimentary canal and second, toxemia. Both of these are made possible by the lack of acidity. From this he deduces the principle that the dirtier the milk the more important that it should not be cooked since boiling utterly destroys the balance provided by nature. His patients receive instruction that the milk *must* be fresh. It must *not* be boiled or pasteurized or sterilized. Such milk contains much that it ought not to contain, but it contains also a powerful antiseptic, the streptococcus lacticus.

Such archaic methods, however logical the reasoning, appear incredible to us in this country until we realize the utter lack of refrigeration in England both at the farm and in the home. Apparently only milk used at the Infants Hospital is refrigerated at the farm, and protected during transit by means of insulated churns. Nothing could emphasize more strongly than this little volume, that which we are all so prone to forget. Namely, the radically different conditions prevailing in different countries which make it impossible to insist upon exact parallelism in infant feeding.

American infant feeding is based on the natural assumption that ice will be used for refrigeration in every household, even in those of less than average intelligence, and will be lacking only among the very poor. Dr. Vincent's thesis is not, therefore, applicable to conditions as we meet them in this country.

T. S. S.

LEHRBUCH DER KINDERHEILKUNDE FÜR AERZTE UND STUDIERENDE. von Professor Dr. med. BARNHARD BENDIX. Privatdocent für kinderheilkunde Dirigierender arzt der Charlottenburger Säuglingsklinik-Sechste, durchgeschena und verbesserte auflage. Mit 83 abbildungens im texte. Urban & Schwarzenberg, Berlin, Wien, 1910.

Prof. Bendix is so well known as a writer that the appearance of the Sixth edition of his text-book attracts attention. When it is considered that the first edition was only published in 1899, a succession of five other editions in eleven years attests the rapid progress made during that period in our pediatric knowledge. More especially in the physiology of nutrition and the disturbances of nutrition had the rewriting of these sections become imperative. It is refreshing to find that the author from his ample experience as director of the Charlottenburger Säuglingsklinik, believes that every woman is capable of pro-

ducing milk and that women who in the first days or even weeks after childbirth have almost no milk can, through regular application of the babe to the breasts, be brought eventually to produce the necessary or nearly sufficient amount of breast milk.

Despite the eminent amount of work given to the physiological problems of infancy by German investigators, it is interesting to note that twenty pages are given to breast-feeding and but fifteen to artificial feeding. Only half a page is expended upon feeding during the second year and the same amount upon the feeding of older children.

Alimentary intoxications, which, since Finkerstein's publication, is attracting much attention is here discussed very properly together with catarrhal enteritis and cholera infantum, and the conservative opinion expressed that its phase as a causative factor must await the further commutative results of investigation.

But a single paragraph is given to the serum treatment of cerebrospinal meningitis and the author believes that the reported results are too contradictory to establish it as yet in practice. No mention is made of American works by Flexner and others.

The volume furnishes the American practitioner with a concise resume of German pediatrics while the abundant references to literature in foot-notes and the bibliographies at the close of each section add greatly to its value.

T. S. S.

I. THE OCCURRENCE OF INFANTILE PARALYSIS IN MASSACHUSETTS IN 1908. II. INFANTILE PARALYSIS IN MASSACHUSETTS IN 1910. Reprinted from the Monthly Bulletin of Mass. State Board of Health, Boston: Wright & Potter Printing Co., State Printers.

These are model reports. They deal with one of the most important investigations of recent years and are an evidence of the advantage to the State of placing the right man in the right place. Without prejudice to his coworkers whose less recognized efforts have doubtless contributed largely to the thoroughness and high quality of the reports, Dr. Lovett's summaries and analyses of the data collected by a house to house canvass of the cases of Infantile Paralysis occurring in the State during 1908 and 1909, make notable documents. It scarcely seems as though an avenue of infection or source of contagion had been overlooked in this gathering of statistics. In the search for light upon an infection of this subtle type, negative information becomes almost as valuable as positive findings and a continuation and extension of the same exhaustive methods should after a series of years narrow the field and prepare the way for important conclusions or discoveries. Already by such research the contagiousness of the malady, formerly denied has been pretty conclusively demonstrated

both here and abroad. The second volume also contains a detailed report of the cases in the Berkshire District supplementing that which appeared in the first volume. There is also a study of the symptoms of the prodromal and acute stages based upon experimental work with monkeys and observation of four human cases. Of even greater importance to the general practitioner is the summary of the methods of treatment in infantile paralysis emanating from the Department of Orthopedic Surgery of the Harvard Medical School. This is probably the most authoritative pronouncement which we have had thus far upon this vexed question, and should by itself create a demand for these reports.

T. S. S.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Relation of Chemical Composition of Human Milk to Chronic Diarrhea and Eczema in Nurslings.—W. J. Maloney (*Practitioner*, 1911, lxxxvi, 282) says that diarrhea in breast-fed infants whose feeding in carefully directed may persist in some cases owing to excess of fat in the milk; in others, either owing to the presence of an abnormal laxative principle in the milk or to the undue irritability of an otherwise normal intestinal tract. Eczema may arise in nurslings from overfeeding, from richness of the milk in sugar, and from the influence of a faulty maternal hygiene on the chemical composition of the milk, but it may also exist in the absence of overfeeding and when the milk contains only a normal amount of sugar. It may remain unaffected by the sacrifice of all the maternal indiscretions of diet. Probably it may arise independently of its commonly alleged factors, yet the coexistence of diarrhea and eczema in some of the writer's cases makes him reluctant to exonerate the milk supply in any case of eczema occurring in a nursing.

Bacillary Dysentery.—In a symposium on this subject special reference is made to the treatment by ingestion of lactose suggested by A. I. Kendall (*Bost. Med. Surg. Jour.*, 1911, clxiv, 288) for the purpose of changing the metabolism of the invading pathogenic bacteria. The patient is first given a dose of castor oil or other cathartic to clean out the intestinal tract thoroughly. All food except sterile water is withheld for twelve to fifteen hours to facilitate this cleaning out. Lactose, 5 per cent. solution in sterile water, is then fed by mouth for several days, until the acute symptoms abate, or until it becomes apparent that the patient requires some nitrogenous food. Whatever nitrogenous food is selected must be fed cautiously, in small amounts, simultaneously with an excess

of utilizable carbohydrate to protect it from bacterial attack. The lactose should be fed in rather small amounts, often repeated, to keep up a stream of this sugar in the alimentary canal, otherwise the proteolytes will be able to attack whatever nitrogenous substances may be present in the alimentary canal between the doses of lactose. Dextrose (Kahlbaum's) may be infused, preferably as a 2.5 per cent. solution in physiological salt solution, to bring to normal the dextrose content of the blood and to furnish fluid to the patient. This feeding of lactose is intended to accomplish a twofold purpose: to furnish to the host a readily assimilable food, requiring a minimal expenditure of energy to metabolize it, and to change the character of the metabolism of the dysenteric flora from the proteolytic to the fermentative type. This change in the type of the intestinal flora is particularly desirable to prevent further intoxication of the host and to give him a better chance to combat the poisons already absorbed. The chief errors made last summer in the application of this treatment were: 1. Dextrose was not used soon enough in the majority of cases. Dextrose infusions should be given at the very start, while the patient is undergoing the initial starvation. By so doing the patient is provided with a most readily utilizable food which spares body nitrogen without the slightest expenditure of digestive energy. 2. Lactose also should be fed within twenty-four hours, and if possible within eighteen hours. The longer the carbohydrate is withheld, the longer the dysentery bacilli have a free field to produce toxins.

A. I. Kendall and A. W. Walker (*ibid.* p. 301) find that a longer or shorter time after lactose feedings are started, the fecal flora undergoes a rather striking change. The streptococci tend to disappear, the colon and dysentery bacilli diminish in numbers, and longer, slender Gram-positive rods take their place. The numbers of bacteria in the dejecta increase considerably in numbers as well. In the more favorable cases, the flora which results from the administration of lactose resembles that of a normal nursling except that there are relatively more Gram-negative forms referable to the *B. coli* type. The whole cultural complex changes from the aerogenic, putrefactive type to the acidogenic, fermentative type of flora. The length of time necessary to bring about this change varies somewhat and depends, in part at least, upon the numbers and activity of the residual putrefactive flora which succeeds in surviving the starvation period in which all food is withheld from the patient.

As to the practical results, Henry Bowditch (*ibid.*, p. 294), who records the treatment of thirty-nine cases, says that lactose in solution can be given earlier than was formerly considered. Under these conditions it certainly helps ingestion of liquids. It has a beneficial effect on dejecta despite the fact that this was not borne out in the histories. Lactose and dextrose in the irriga-

tions gave no demonstrable therapeutic value. Dextrose infusions were certainly an improvement.

Examination of Infants' Stools.—F. B. Talbot (*Arch. Ped.*, 1911, xxviii, 120) insists upon the diagnostic value of examination of infants' stools and describes simple methods. A white stool usually indicates a fat indigestion, and a brownish-yellow stool, which gradually becomes lighter and lighter, suggests diminishing powers of fat digestion. The odor of butyric acid or a shiny, oily surface means fat. Rough test for fat, place a piece of stool on ordinary soft paper and allow it to stand until the paper is wet through, then remove the stool and dry the paper thoroughly; if the stool contains a large excess of fat the paper will be oiled. One coverglass preparation should be stained with Sudan iii, another with carbol-fuchsin. The former stains both neutral fat and fatty acids; the latter, fatty acids and soaps. Absence of fat very often shows why the baby does not gain, and always means that fat is not the cause of the indigestion. This rough method of estimating the relative proportion of neutral fats, fatty acids, and soaps also gives an idea of the digestive functions. If there is an excess of fat, most of which is split, the digestion is normal and assimilation is abnormal; if the majority of the fat is unsplit or only partially digested both digestion and assimilation are abnormal. It is of value to examine the stool for the products of sugar cleavage, *i.e.*, lactic and lactic acid; their presence may often be determined by the odor alone. A strong acid reaction of the stool, and especially such as burns the buttock, means that the sugar in the food should be reduced. Lactic acid may be demonstrated in many of these stools by the Uffleman test; this test, however, is not absolutely reliable. The presence of starches may be easily determined by mixing a portion of stool with Lugol's solution, which will turn the starch blue or violet. There are two distinct kinds of curds—one small and soft, composed of fat, and the other large and tough. These large, tough masses are composed of casein and undigested milk fat (neutral fat). Casein curds, accompanied by symptoms of indigestion, always mean that the amount of casein in the food should be lowered. Blood and pus are easily recognized under the microscope and indicate an ulceration of the bowels. Strongly alkaline stools mean putrefaction of protein, and highly acid ones fermentation of carbohydrate.

Modification of Mother's Milk.—G. Baughman (*Pediatrics*, 1911, xxiii, 98) says that while much is taught about modifications of cow's milk little is said regarding regulation of mother's milk. The latter may be done in several ways. The shorter the interval between nursings, the higher the specific gravity of the milk. Most of the infants that are doing poorly are getting milk that is too concentrated. One of the most prompt and efficient methods of reducing proteids is to make the mother take out-door exercise. If this is not possible, carefully directed gymnastics at home may be resorted to. General massage, just

as exercise, reduces the proteids. Massage of the breasts tends to increase the flow of milk. Nervous conditions and anxiety alter the milk. They may be controlled by suggestion. Probably the best stimulant for the whole lacteal secretion is proteid food. The nitrogenous foods seem to stimulate more particularly the production of fats. Increase in fluids increases the amount of milk; their decrease increases the specific gravity. The only drug that the writer has found to act as a galactagogue, except those that in a general way improve the whole body, like tonics, is muriate of pilocarpine. He gives in water one-eighth to one-half grain at night.

Abortive Cases of Poliomyelitis.—The association, especially in epidemics, of cases showing all gradations in the degree and extent of paralysis and cases of illness exhibiting only the symptoms of a general infection, usually accompanied by symptoms indicative of meningeal, spinal, or encephalitic irritation, but without definite motor disturbances, but sufficiently similar to the pre-paralytic symptoms observed in paralytic cases, and in many instances sufficiently different from the symptoms observed in the more common infectious diseases to justify a provisional diagnosis of poliomyelitis, has been recognized. It has recently been shown that monkeys inoculated with the virus of poliomyelitis occasionally pass through an indefinite illness without resulting paralysis, clinically similar to abortive attacks as observed in man; also that the serum of monkeys and human beings which have recovered from poliomyelitis, mixed in suitable proportions with an emulsion of the virus and allowed to remain in contact for a sufficient length of time, renders the virus inactive, so that when injected into fresh monkeys it fails to produce the disease. This property has been found to be absent from the serum of normal persons and monkeys. Netter and Levaditi, availing themselves of this test, have demonstrated this germicidal property against the virus of poliomyelitis in the serum of a suspected abortive case. Observations and experiments along this line in an epidemic at Mason City, Iowa, by J. F. Anderson and W. H. Frost (*Jour. A. M. A.*, 1911, lvi, 663) indicate that normal human serum may have a germicidal action on the virus of poliomyelitis. If this is so, however, the action has quantitative limits which clearly differentiate it from the action exercised by the serum of persons who have had poliomyelitis. No appreciable difference has been demonstrated between the normal serum of adults and of children in regard to their action on the virus. The serum of persons who have recently recovered from frank attacks of poliomyelitis exhibits a germicidal action on the virus considerably greater than that exhibited by normal serum. Serum from a person suffering from paralysis of spastic type showed the same properties, thus confirming the clinical evidence that acute poliomyelitis may cause paralysis of this type. The serum of six out of nine patients (66.7 per cent) who had recently recovered from suspected poliomyelitis without paralysis

(abortive cases) showed the same germicidal action as the serum from a frank case of poliomyelitis. In the serum from the other three suspected abortive cases of poliomyelitis the writers were unable to demonstrate any germicidal property beyond that shown by normal serum. These three cases clinically resembled poliomyelitis more than did some of the adult cases; and the symptoms were, on the whole, equally severe. The following possibilities suggest themselves: 1. The cases may not have been poliomyelitis. 2. They may have been poliomyelitis, but, if so, antibodies were either formed in less amount, or disappeared more rapidly than in adult cases. The experimental evidence on which the specificity, constancy, and quantitative relations of this reaction must be estimated is scant. So far as it goes, however, it justifies the inference that the reaction is specific. The writers conclude that the diagnosis of acute poliomyelitis has been established in six of nine suspected abortive cases.

Vision of Deaf-mutes Compared with that of Normal Children.—Van Lint (*La Policlin.*, Feb. 1, 1911) has examined a number of deaf-mute children with reference to the accuracy of their vision in comparison with that of normal children. It has been shown that blind children have greater accuracy of hearing, touch, and smell than other children. In the same way the vision of deaf-mute children is found to be more accurate than that of normal children. They recognize a larger number of letters or signs in the same period of time. Visual acuity, the faculty that allows them to distinguish forms is greater in deaf-mutes.

Early Coxalgia, Diagnosis and Treatment.—Savariaud (*Jour. de Med. de Paris*, Feb. 4, 1911) thinks that there are diagnostic differences between tuberculous osteoarthritis of the hip-joint, and arthritis or synovitis. The latter is far less serious and may often be cured in six months or so, while osteoarthritis takes some three years. Arthritis begins with fatigue, pain in the hip, thigh, and knee, slight atrophy, swelling of glands, and slight elongation of the limb. In presence of these signs we should test with tuberculin, by Waldenstrom's method, and with the x-rays. The best treatment is a plaster cast about the hip, though some physicians favor rest in bed and extension. The author thinks that with a nervous, active child this is not enough to insure rest of the joint. He thinks that the cast is needed, and that when a comfortable one has been applied the child should be sent to the country for some months. On his return, if an early case, he will probably be cured.

Splenomegaly of Inherited Syphilis in Children.—In reporting a case of splenomegaly with recurrent jaundice ending in hepatic cirrhosis and ascites, F. P. Weber (*Proc. Roy. Soc. Med.*, 1911, iv, Sect. Dis. of children, 61) says that moderate splenomegaly in children of about 5 to 16 years may be almost the only evidence of an inherited syphilitic taint, but, in such cases, Wassermann's sero-reaction for syphilis (if available) would doubtless generally

give a positive result. Other evidence of inherited syphilis is occasionally forthcoming. The splenomegaly of inherited syphilis is often accompanied by occasional, usually only slight, attacks of obstructive jaundice and by excess of urobilin and urobilinogen in the urine. Hepatic cirrhosis, with or without ascites, may be associated with the splenomegaly, and at the time of death the hepatic cirrhosis in such cases is probably usually of the ordinary multilobular ("hobnail") type. Though it seems doubtful that the cirrhosis of the liver in these cases is of specific syphilitic origin, it is quite possible that the presence of an inherited syphilitic taint may diminish the resistance of the liver toward the action of toxins, including alcohol, and render it specially liable to cirrhosis. The inherited syphilis in these cases may be, but often is not, associated with some degree of "infantilism"—i.e., more or less retardation in general physical development, and especially in the sexual functions. In these cases great caution must be employed with regard to antisyphilitic, especially mercurial, treatment, probably on account of the general delicacy of the patients and their liability to renal and catarrhal complications. Iodid of iron seems to be useful. In these cases there is generally very little real anemia, even when the general appearance of the patient is cachectic; and anemia, if present, is often only temporary. In some cases there may be a certain amount of polycythemia, probably of reactive nature, sometimes sufficient to constitute a symptom-complex, which might be termed "splenomegalic polycythemia of inherited syphilis in children." Other unknown (toxemic?) conditions may cause splenomegaly and recurrent jaundice in children, similar to that met with in cases of inherited syphilis. "Abdominal crises," pain, etc., of uncertain explanation, may occur occasionally both in the inherited syphilitic and in the other cases. Some cases of "familial" splenomegaly occurring in two or more brothers or sisters may be dependent upon inherited syphilis, but familial splenomegaly in children after infancy is better recognized in connection with chronic acholuric or so-called hemolytic jaundice and with primary splenomegaly of the Gaucher type. Splenomegaly in children may be the most important sign of the presence of hepatic cirrhosis, when the former is either secondary to, or due to the same cause as, the latter. Some cases of splenomegaly in children with inherited syphilis probably ultimately present the characteristic clinical features of splenic anemia or Banti's disease.

Congenital Syphilis of the Heart.—A. S. Warthin (*Amer. Jour. Med. Sci.*, 1911, cxli, 398) says that congenital syphilis of the heart is generally considered to be rare. What is really the case is that gumma of the heart is rare in congenital syphilis, but that congenital syphilis of the heart in the form of a localized or diffuse interstitial myocarditis is probably not uncommon. The criterion is the demonstration of *Spirochæte pallida* in the

interstitial tissues of the heart wall. This belief the writer substantiates by the report of twelve cases, nine of which died before puberty. Only in the older cases was there a definite history of cardiac affection, and in none of the cases had a diagnosis of syphilis been made to explain the symptoms and fatal termination. In one case congenital syphilis had been diagnosed, but no cardiac involvement was suspected. Macroscopically the hearts showed nothing characteristic except slight pallor or lighter areas in some cases and in some a dilatation of the cavities. Microscopically they presented light-staining areas, of various size and number, separating or replacing the muscle fibers, and made up of fibroblastic or myxomatous tissue, having a delicate granular or fibrillar reticulum in which were numerous cells of lymphocyte or plasma-cell type, and numerous large epithelioid cells with abundant granular protoplasm and pale nuclei. Many of the latter were vacuolated and fragmentation with loss of nucleus was common in the larger patches. The interstitial process seems to follow the course of the smallest arterioles and capillaries, apparently rising from their walls or from the perivascular tissue. The fibroblastic epithelioid areas in all the hearts described were crowded with spirochetes. They are much more easily demonstrable in the heart muscle than in liver or spleen.

Treatment of Extensive Caries in Children by Extraction.—J. F. Colyer (*Lancet*, Feb. 4, 1911) treats extensive caries in children by extraction. The principal criticisms brought against this method of treatment have been: 1. That the loss of mastication area interferes with the growth of the child. 2. That the effect on the permanent series is to cause irregular eruption and crowding of the teeth. These criticisms are not altogether supported by facts, and the effect of the removal of the teeth on the general health of the child is beneficial rather than harmful. The harm accruing to the permanent series is slight and well outweighed by the gain to general health. The treatment consists in the removal of all functionless deciduous and permanent teeth. It is urged that such treatment robs the child of masticating power, but such teeth are useless as far as the function of mastication goes; indeed, they render the first permanent molars functionless, because a child with tender teeth "bolts" food and cannot chew..

Pyloric Stenosis in Infancy.—N. P. Marsh and K. W. Monsarrat (*Brit. Jour. Child. Dis.*, 1911, viii, 53) say that when the diagnosis of stenosis has been established our first object should be to find, if possible, a food that will agree with the infant; and as breast-milk is as a rule the best, it should, when possible, always be given. Every endeavor should be made to keep the milk secretion active, particularly in cases when the vomiting is severe and in which it is advisable to abandon breast-feeding for a day or so and substitute for it sterile or albumin-water. If it is impossible to obtain the mother's milk or that of a wet-nurse,

then sterile water with 6 per cent. lactose, one ounce every hour for twenty-four hours or longer, should first be given; to this peptonized or citrated milk, beginning with a teaspoonful to each ounce, may gradually be added, and as the vomiting becomes less the quantity of milk and the intervals between the feeds may be slowly increased until the infant is taking that amount of nourishment which its weight and age demand. If the vomiting is frequent, for the first few days the stomach should be thoroughly washed out with warm water night and morning, and if improvement follows it should be continued at least once a day for a couple of weeks or even longer, after which time it can, as a rule, be gradually discontinued. If the infant is much exhausted and the fontanelle depressed administer continuous saline *per rectum*. Opium or atropin, both of which have a specific relaxing effect upon the spasm, may be given in small doses, and with them an alkali, on the assumption that there is hyperacidity. Purgatives should be avoided. So long as weight is sustained, even though there may be no increase, perseverance with medical measures is justifiable. If weight is lost it points to the fact that the hyperplasia is of such a degree that even with spasm allayed no sufficient amount of food can be passed through the narrowed pylorus. Seven to ten days is long enough to show definitely whether medical measures are going to achieve their purpose. If, however, there is no amelioration at all, there is no reason why this period should not be shortened.

Differential Diagnosis of Hodgkin's Disease and Tuberculous Adenitis.—C. H. Melland (*Edin. Med. Jour.*, 1911, n. s. vi, 156) urges the importance of this diagnosis in its bearing upon treatment. Tuberculous adenitis, though in its early stages particularly amenable to medical treatment, is a condition which is liable to drift into the hands of the operating surgeon. The complete removal of the glands is a speedy and direct route to results which other methods attain more slowly. Operation in Hodgkin's disease is always unsatisfactory and in some cases disastrous. In advanced cases of Hodgkin's disease there is almost always a severe grade of anemia, though in the earlier stages often little or none. The distinctive feature is a diminution in the number of the leukocytes with a relatively high proportion of lymphocytes. With a case with enlarged glands, in which the temperature, after keeping quiet for a while suddenly begins to rise, suspect Hodgkin's disease. The temperature in tubercular adenitis is either normal throughout or else shows the regular hectic character of tubercular infection, and never takes on this recurrent type. Calmette's ophthalmic tuberculin reaction is of value in differentiating these affections.

Tuberculosis of the Bronchial Glands.—H. F. Stoll (*Amer. Jour. Med. Sci.*, 1911, cxli, 83) states that tuberculosis of the bronchial glands often exists as a distinct clinical entity, capable of diagnosis, particularly in children. He discusses the diagnos-

tic points as shown in the literature and in his own cases. The presence of dilated veins over the anterior aspect of the chest, spinalgia, interscapular or vertebral dulness, and vertebral bronchophony speak strongly for enlarged bronchial glands, the tuberculous nature of which is practically assured when in addition to the above the individual is under weight and has a paroxysmal cough and symptoms of tuberculous toxemia. Recognition of the disease while it is still limited to the bronchial glands is of the utmost importance, as the best results of tuberculin therapy are obtained in glandular tuberculosis.

Ureterointestinal Anastomosis for Exstrophy of the Bladder.—To lessen the danger of ascending infection in this procedure, Axel Werelius (*Surg. Gyn. Obst.*, 1911, xii, 158) suggests the formation of an independent pouch for reception of the urine before it enters the intestinal canal proper. Such an arrangement exists in birds. Through an oblique incision in the left inguinal region, like an appendectomy incision, the sigmoid is divided about seven inches above the recto-sigmoidal junction. After closing the ends a lateral anastomosis is made between the proximal end and the upper portion of the rectum, leaving above this a portion about six inches long to serve as a bladder. The abdomen is closed. A flap of bladder containing the ureters is dissected and all of the bladder mucosa cut away. Through a median abdominal incision the intestinal pouch is exposed and partly delivered through the wound and clamped with rubber-covered forceps. The clamped gut is opened into the lumen. The bladder flap is then approximated to this intestinal opening and sewed to the edge, through and through, with linen. The opposite edge is sewed with a Connell stitch, so that, when finished, the gut somewhat overlaps the bladder flap. If the intestinal tissue is abundant serosa may be drawn over so as to completely cover the flap. The abdomen is closed with gauze drainage.

Torsion of Broad Ligament and Fallopian Tube.—Torsion of the pedicle of ovarian tumors in children is not uncommon, but M. A. Cassidy and L. E. C. Norbury (*Lancet*, Jan. 14, 1911) have been unable to find in the literature any instance of acute strangulation of a healthy and normally situated tube and ovary. Such a case they record as occurring in a girl of eleven years. Several months before the attack during which they removed tube and ovary she had suffered from similar symptoms for one day. There was no evidence of ovarian disease.

Importance of the Analysis of Mother's Milk in Some cases of Dyspepsia of Nurslings.—Barbier (*Jour. de med. de Paris*, Nov. 15, 1910) says that infants who are hereditarily predisposed to syphilis and tuberculosis are peculiarly sensible to errors of diet and anomalies of the milk. In the first rank of such causes of illness the author places excessive feeding with cow's milk. The child is sensibilized by the milk and anaphylactic phenomena occur. Tuberculosis, cholemia, or constipation in the mother

may poison the child, causing diarrhea, vomiting, and arrest of development. In some cases the milk of the mother contains too large a proportion of albuminoids or of fats. Marked variations in the composition of the milk occur at different times in the same day as well as according to the age of the milk. The fat and casein are present in smallest amount in the morning, and as a maximum at four in the afternoon. The differences in the food of the mother cause variations in the composition of the milk. A diet rich in albumin increases the casein and fat while liberal carbohydrate food causes a large increase in fats but a poor casein content. These facts emphasize the importance of a correct analysis of the milk in cases of indigestion in the nursing infant.

Advantages and Inconveniences of Antidiphtheritic Serotherapy.
—M. V. Péchère (*Bull. de la Soc. royale des sci. med. et nat. de Bruxelles*, Nov., 1910) has made a careful study of the advantages and the alleged disadvantages of the use of antidiphtheritic serum. He finds that the use of the serum has lowered the mortality of the disease from 50 per cent. to 10 or 12 per cent. and has greatly shortened the course of the disease, and made it less serious. The membrane exfoliates rapidly after injection of serum, and the complications are much less frequent and severe. Paralysis is now much less common than formerly, and the serum prevents the action of the poison on the heart which was formerly so fatal though the action of the serum is more rapid and effective if it be injected early in the disease, the late complications may be treated by its use in large doses. It has a specific action only against the Klebs-Löffler bacillus, not acting against the complicating infections caused by the streptococcus, staphylococcus, and pneumococcus. The accidents caused by it are urticarial eruptions, albuminuria, and rise of temperature. The albuminuria is transient and probably due to the entrance into the blood of a heterogeneous albumin, which is rapidly eliminated. The number and gravity of these symptoms is not such as to counterbalance the advantages which time has shown to be the result of the use of the serum. The author thinks that serum symptoms are never, or very rarely, the cause of death.

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